



# THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্তৃত্ব দ্বাৰা প্ৰকাশিত

PUBLISHED BY THE AUTHORITY

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No. 350 Dispur, Wednesday, 18th May, 2022, 28th Vaisakha, 1944 (S. E.)

GOVERNMENT OF ASSAM

ORDERS BY THE GOVERNOR

DEPARTMENT OF HOUSING & URBAN AFFAIRS.

## NOTIFICATION

The 2nd May, 2022

**No.UDD(T)187/2022/6**– In exercise of the powers conferred by the Section 9 of the Assam Town & Country Planning Act, 1959 (Assam Act II of 1960) read with Sub-Section (1) of Section 10(Ten) of Assam Town & Country Planning Act (as amended), the Governor of Assam is pleased to published the following notice regarding the publication of Draft Master Plan for Raha.

### **Notice for publication of Draft Master Plan for Raha**

1. It is notified that the Draft Master Plan for Raha prepared by the Directorate of Town & Country Planning , Government of Assam, Town & Country Planning Act, 1959 read with Sub-Section 1 of Section 10 of Assam Town & Country Planning Act, 1959 (as amended) for the area described in the schedule below is here by published.
2. Any person or persons affected by the Draft Master Plan may submit their objections or opinions in writing to the Director, Town & Country Planning, Government of Assam, Dispur, Guwahati-6 within two months from the date of publication.
3. The Draft Master Plan for Raha with all relevant papers and maps may be inspected free of cost during the office hours at the office of Director, Town & Country Planning, Government of Assam, Dispur, Guwahati-6, office of the Deputy Director, Town & Country Planning, Dist Office –Nagaon, the Circle Office, Raha Revenue Circle, Raha, office of the Chairman, Raha Municipal Board, Raha. Copies of the Draft Master Plan for Raha are available at the office of the Deputy Director, Town & Country Planning, Nagaon on payment.

**SCHEDULE****A. Situation and area :**

District	: Nagaon
Subdivision	: Nagaon.
State	: Assam.
Master Plan Area	: 41.20 Sq. Km.
Municipal Board Area	: 5.18 Sq.Km.

Apart from the Raha Municipal Board Area, Raha Master Plan area covers 14 Nos. of nearby villages. The villages included in the Draft Master Plan for Raha with Mouza are as follows:-

Sl. No.	Mouza	Villages
<b>1</b>	<b>Sahari</b>	Dighali Ati
		Garmari
		Chaparmukh Gaon
		Chaparmukh Town
<b>2</b>	<b>Barapujia</b>	Balipara
		Mulankata
		Buragaon
<b>3</b>	<b>Jagial</b>	Dighaldari
<b>4</b>	<b>Raha</b>	Tupakuchi
		Khaigarh
		Hariamukh
		Sara Gaon
		Joapukhuri
		Rupahitoli

**B. Description of boundaries :**

NORTH	: Barapujia
SOUTH	: Kapili River/ Chaparmukh Rly. Jn
EAST	: Phulaguri
WEST	: Thekeraguri Rail Gate

**KAVITHA PADMANABHAN,**  
Commissioner & Secretary to the Govt. of Assam,  
Department of Housing & Urban Affairs.

## *Chapter : 1*

### **INTRODUCTION TO MASTER PLAN AREA**

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Raha is a part of Central Assam District of Nagaon. It is situated at a distance of 22 Kms on the West of District Headquarter Nagaon City and 102 Kms east of the State Capital, Dispur, Assam. It is located on the bank of the Kalong and Kapili River. Raha Town Committee was formed in the year 2005 vide Govt. Letter No.UDD (N) 185/2000/244, dated 09/08/2005 and by election the Town Committee was established w.e.f.15/09/2009 under the Chairmanship of Raha Town Committee. The Town Committee was upgraded to Raha Municipal Board in the year 2018.

Raha is well connected by road and railway. National Highway 37 passes heart of the Raha town. Apart from administrative activities, the town is a centre of education, trade and commerce

The demarcation of the planning area of Raha has been made considering the present growth of the town, the physical feature of the surrounding areas, communication network, different type of developmental works already come up in nearby villages and potential for future development of the region. The town has been growing towards Raha - Bebejia-Nagaon Road, Raha-Barapujia - Morigaon Road, Raha - Jagiroad-Guwahati Road.

As of 2011 India census, Raha Municipality Board Area has a population of 11030 of which male population is 5539 and female population is 5491 as per the Census 2011.

Before finalization of the planning area ,discussion were held with district level officers dealing with developmental works headed by Deputy Commissioner, Nagaon and the elected representative of Raha Municipal Board as well as Hon'ble MLA Raha Constituency.

It was observed that Raha town area has been growing haphazardly and this has created enormous problems to the habitant of the town. In this context, "Draft Master Plan Raha 2045 is prepared to guide the physical development of the town with some surrounding villages in future. This plan is prepared, basically a



land use plan considering all the urban development aspects, with forecasting all the service up to 2045. By and large, this Master plan has been prepared as per the provision of URBAN DEVELOPMENT PLANS, FORMULATION AND IMPLEMENTATION, GUIDELINES, 1996 prepared by the INSTITUTE OF TOWN PLANNERS, INDIA NEW DELHI under the assistance of the Ministry of Urban Affairs and Employment, Govt. of India, New Delhi and Circular issued by U.D.D (T & CP Wing), Govt. of Assam time to time. Uniform Zoning Regulations are considered as it is already approved for all the towns of Assam including Raha Town by the Govt. of Assam.

### 1.1 LOCATION :

Raha is a small town in Nagaon district of Assam. It is located at 26.20° North latitude and 92.63° E longitude. Raha town is surrounded by Barapujia on the North, Kapili River and Chaparmukh Railway Station on the South, Phulaguri on the East and Thekerguri Rail Gate on the West. It is located on the bank of the Kalong and Kapili River.



Location of Raha Town



## 1.2 BRIEF HISTORICAL DEVELOPMENT OF RAHA :

Raha is a small town in Nagaon district of Assam, situated near the National Highway 37. The river Kolong and Kapili flows near Raha. Perhaps Raha was a part of the ancient Pragjyotish. It is mentioned in Pillar Inscription of Samudrgupta that Kamrupa and Davaka was neighbouring state of the Guptas. It was the temporary capital of the Kamata king Ratnapal alias Jongal Balohu. Testimonies of this fact can still be seen in the Raha area.

The Kapila River was the boundary between the Ahoms in North and Kacharies in the South. During the reign of Susenpha or Pratap Singha, tradition of appointing a border out post officer, in the area begun. And the name of the border out post was 'Raha' and the assigned its first officer was known as 'Rahiyal Barua', belonged to the family of Momai Tamuly Barbarua, the village organizer. Pratap Singha simulteniously opened two borders out post along with the Raha Chaki namely at the mouth of Jagi and Kajulikukh respectively in order to get latest information the about movement of Jayantia Raja and Demoria Raja, and the names of these two outpost officers were called as Jagiyal Gohain and Kajolimukhiya Gohain, respectively.

During the time of Suhungmung or Dihingia Raja, war between Ahom and the Kachari started and Kachari were defeated and their king Datchung escaped but he was killed in later. Perhaps during the time of Suhungmung border out post was set up at Raha and Kajolimukh for time being. On the basis of this fact Mr. J. P. Wade assumed Raha Chaki and Kajomukh chaki established in the year 1527. But this fact might not true as the Raha Chaki was established in 1536, that is, after the Kacharies were defeated and the entire tract between Dhansiri and Kolong River of Nagaon were annexed to the Ahom territory. Perhaps the cause of establishment of Raha chaki for, Pratap Singha, was to check the growing strength of the Kacharies. Pratap Singha had created two new posts- Barbarua and the Barphukan and the area laying in Raha, Jagi, and Kajolimukh was kept under the charge of Barphukan.

At that point of time Raha chaki became a strategic border post not only for the Kacharies but also for the Jayantiyas. The Rahiyal Barua of Raha Chaki had played a significant role from the time of its creation by Pratap Singha (1603 – 1641) to till the time of Phulaguri Dhewa (1861). It is not clear who was the First Rahyial Barua, selected by Pratap Singha or history silent about this. Teleka Handique was appointed by Jayadhaj Singha (1648-1663) and in relation



the former was his father in law. And during this period the importance of Raha Chaki increased. According to the Report of Moft Mills, the name the revenue officer of the Raha area in the 1851-1852 was Sabhodhar Barua. It is no doubt that this officer was belonged to the family of Rahiyal Barua.

In the Phulaguri Dhewa (1861), one Sambhodhar Barua of Raha was actively involved and perhaps he was belonged to the family of the Rahiyal Barua. There was matrimonial alliance between the two families of Rahiyal Barua and royal family of Tupakuchi. There was a famous than named as Burhagohain than near the residence of Rahiyal Barua. Purnananda Burha Gohain had granted devottar land to this than. The idol of this than used to bring out during Gohain Uliua Mela.

### 1.3 CLIMATE :

The climate of the Nagaon district as well as Raha town is characterized by a highly humid atmosphere all through the year. Summer heat is relieved to a great extent by the cool breeze of the river Kalong and Kapili. The monsoon starts from the month of May and continues up to August. The winter is cool and starts from November and continues up to February. Generally weather is dry. The maximum and minimum temperature varies from 38.40 Degree C (Max.) 8.60 Degree C (Min). The maximum rain occurs between June to September and average annual rainfall of Raha is 1726.05 MM.

**Table-1 :** Climatic condition of Raha

SL.No.	Parameter	Description
1.	Temperature	38.40 Degree C (Max.) 8.60 Degree C (Min)
2.	Extreme months	July in Summer and December in Winter
3.	Coldest month of the Year	December
4.	Humidity	75% (Max)
5.	Rainfall	1726.05 MM (Annually)
6.	Monsoon Period	53 rainy Days
7.	Winter Season	November to February

#### **1.4 TOPOGRAPHY :**

Raha town is situated on the flat alluvial plain which slopes towards south and south-west where the old beds of the Kalong and Kapili river are still in existence. Many small beels like Ranthali beel, Nimajan Dubi, Hatibandha Dubi ,ponds and marches surrounded the town as well as the Master Plan Area.

The land is alluvial and loamy and consists of clay and sand. The cultivable land is scattered either sides of the beels as well as the surrounding villages nearest to the town. In considering the high land as well as the physical features of the surrounding areas the Town is growing mainly towards North of Barapujia Road, towards Guwahati of the National Highway-37, towards Nagaon of the National Highway -37. Some developments have also taken place along the major roads towards the Chaparmukh Railway Station.

#### **1.5 CITY INFLUENCE AND ITS CHARACTERISTICS INCLUDING SETTLEMENT PATTERN, RURAL-URBAN SCENARIO, HISTORY OF THE PHYSICAL GROWTH AND EXPANSION OF RAHA TOWN :**

Rural-Urban fringe is an important concept in settlement geography. The rural-urban fringe is the boundary zone outside the urban area proper where rural and urban land uses intermix. It is the area where the city meets the countryside. It is an area of transition from agricultural and other rural land uses to urban use. Located well within the urban sphere of influence the fringe is characterized by a wide variety of land use including dormitory settlements housing middle-income commuters who work in the central urban area. Over time the characteristics of the fringe change from largely rural to largely urban. Suburbanization takes place at the municipal boundary of rural-urban fringe.

The main economy of the Raha rural-urban fringe is agriculture base. The surrounding small villages were also influence the main urban centre. The trading of agricultural finished goods produce in the rural-urban fringe area was taking place with the main urban centre.

While considering the agro base economy of the rural-urban fringe, secondary and other allied services has to be initiated to boost up the economic growth of the main urban center as well as the whole Raha planning area. The main reason



of low profile economy of the town is that less number of people are engaged in secondary, quaternary and other allied services.

Activities related to trade and commerce and transportation alone comprise only 32% of the total employment of the town. It is expected that employment related to transportation and trade & Commerce is going to increase further after the road linkage is established with the town and surrounding villages.

Lack of infrastructure is also responsible in a substantial manner for economic and industrial development of the Raha town. If adequate urban infrastructure such as efficient transportation network, well planned market etc. is provided then the town cannot only upgrade its economic base but also act as a centre for industrial activities of the whole Raha planning region.

Therefore, the prime objective of the development strategy of Raha town will be to bring positive development in the town by improving existing physical infrastructure of the town, so as to encourage more and more people to participation in the secondary and tertiary sector or employment. This will generate more employment in the town, strengthen the local bodies as well as improve the socio-economic condition of the people.

It is observed that different type of developmental works already come up in nearby villages and potential for future development of the region. Presently, the town is growing mainly towards North of Barapujia Road, towards Guwahati of the National Highway-37 and towards Nagaon of the National Highway -37. Some developments have also taken place along the major roads towards the Chaparmukh Railway Station.

## **1.6 CONCEPT OF MASTER PLAN :**

A master plan is a dynamic long-term planning document that provides a conceptual layout to guide future growth and development. Master planning is about making the connection between buildings, social settings, and their surrounding environments. A master plan includes analysis, recommendations, and proposals for a site's population, economy, housing, transportation, community facilities, and land use. It is based on public input, surveys, planning initiatives, existing development, physical characteristics, and social and economic conditions.



### 1.6.1 MASTER PLANNING CAN ASSUME SOME OR ALL OF THESE ROLES :

Develop a phasing and implementation schedule and identify priorities for action:

- Act as a framework for regeneration and attract private sector investment.
- Conceptualize and shape the three-dimensional urban environment.
- Define public, semiprivate, and private spaces and public amenities.
- Determine the mix of uses and their physical relationship.
- Engage the local community and act as builder of consensus.

As city regeneration initiatives are generally long-term propositions, it is important to consider the master plan as a dynamic document that can be altered based on changing project conditions over time

Master plans can have an important role in determining the shape of the urban environment. If not well conceived, they can lead to problems in the future. All of these issues could have been addressed well in advance as part of the master plan.

The proposals for development should be environmentally sustainable. Master Plan is based on inclusive planning. It considers all sections of people in society



in development proposals and focuses on affordability. Master plan gives restrictions on ecologically sensitive areas, on heritage sites and traditional built up areas and gives special norms for these places. Master Plan leads to a balanced growth of the city. It prevents concentration of a particular activity at one place and takes into account efficient distribution of facilities, infrastructure, networks and housing and follows neighborhood concept of development.

### **1.6.2 AIMS AND OBJECTIVES OF THE PLAN :**

The main aims and objectives for preparation of Raha Master Plan are as follows;

- (a) To improve the existing conditions of all facilities services of Raha Master Plan Area and to develop all the urban infrastructures for a estimated population of 52849 by 2045.
- (b) To integrate the development of various activities of Raha town with the adjoining areas.
- (c) To functional distribute of the work centres and residential areas so as to minimize the travel distances and increase efficient functioning of various activities.
- (d) To design a safe, easy and speedy circulation system so as to achieve an efficient transportation network for movement of goods and passengers.
- (e) To accelerate the economic growth by increasing economic activities like industries, services and trade and commerce etc.
- (f) Harmonious judicious utilization of land to ensure compact urban development.
- (g) Ensure urban environment by improvement of infrastructure facilities .

### **1.7 NEED OF A MASTER PLAN FOR RAHA TOWN :**

A master plan or a development plan or a town plan may be defined as a general plan for the future layout of a city showing both the existing and proposed Land use plan. A master plan is prepared either for improvement of an old city or for a new town to be developed on a virgin soil. A master plan is a blueprint for the future. It is a comprehensive document, long-range in its view; that is intended to guide development in the township for the next 20 to 25 years.

It helps in restricting the haphazard and unplanned growth, arranges the pattern of a town in such a way so as to satisfy the present requirements without



introduction of future improvements by the coming generations. It also aims at intelligent and economic spending of the public funds for achieving welfare of the inhabitants in respect of amenity, convenience and health.

On the other hand Master Plan also serves as a guide to the planning body for making any recommendations for public improvement. It removes the defects of uncoordinated physical growth of the various components of a town due to the fact that it considers the entire city area or town as planning and development entity.

To check the haphazard and unplanned growth of the town which have come up due to over-crowding of population such as acute shortage of houses, traffic congestion, inadequate open spaces and insufficiency in public amenities etc, to incorporate the unforeseen development and arranges the pattern of township have lead to the thinking of Preparation of GIS based Master Plan for Raha town.

### **1.8 RAHA AS A URBAN LOCAL BODY :**

Raha Municipal Board : Raha Town Committee was formed in the year 2005 vide Govt. Letter No.UDD (N) 185/2000/244, dated 09/08/2005 and by election the Town Committee was established w.e.f.15/09/2009 under the Chairmanship of Raha Town Committee. The Town Committee was upgraded to Raha Municipal Board vide Govt. Notification No. UDD(M)263/2017/13, Dated Dispur the 11<sup>th</sup> October, 2018. and awarded to Raha Town by the Government of Assam to establish a Town Committee for providing the basic infrastructure facilities to the inhabitants of the town. The Town Committee was established and run-in accordance with the provisions laid down in the Assam Municipal Act of 1956. Raha town comes under the Administration of Raha Town Committee with 10 Nos. of wards in the town and as on 2021 there are 10 Nos. of Municipal wards in the town.

Total area of Raha Municipal is 5.18 sq. km. with total road length of 43.40 Km. Raha Municipal Board consists of the Chairman,Vice-Chairman and wards commissioners who are elected representatives of the wards. The Chairman is the head of the Administration and presides over the meetings of the board. The Executive Officer oversees and administers the plan and execution of the day - to-day activities of the board. Raha Municipal Board is basically entrusted with the maintenance of roads and drainage system, streets lights, public health

facilities and medical, water supply to the inhabitants in the Municipal boundaries in collaboration with PHE Department.

Raha Municipal Board also maintains recreational parks, libraries, community halls and municipal markets. Raha Municipality Boards has various sources of revenue collection and also receive annual grants from the Government. It levies taxes on holdings, rickshaws, carts, cycles, stalls, open spaces, markets and receives taxes on houses, land, water and sanitation.



Raha Municipal Board

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## ***Chapter : 2***

### **DEMOGRAPHY**

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The scientific or more specifically statistical study of population, its size, density, distribution and growth are known as demography. The study of population and its relating characteristics are the basic factor for long range planning works in a town or a city. The study of change in the population and its distribution and composition are also enabling to force the growth of the urban area. The important demographic aspects like housing facilities, urban infrastructure development both for present and future should be thoroughly studied during the preparation of any development plan.

An analysis of demographic features like growth of palpation, its distribution & composition etc. is absolutely necessary to assess the various civic needs like housing facilities, urban infrastructure and other basic services and the amenities. These important aspect of demography both present and future have been thoroughly studied at the time of preparation of Raha Master Plan.

#### **2.1 GROWTH OF POPULATION :**

To better understand the trend of growth of population within Raha Master Plan Area, population had been calculated from the year 1951 Census. The population of Raha town as per 1951, the then census town was 2338 and it has increased to 6144 in 2001 and 11030 in 2011 as per census of India. The population of Raha Master Plan area shows a steady growth. Following table shows the growth of population of Raha Town as well as the Rural area.



**Table-2 :** Trend of Population Growth in Raha Master Plan Area :

Year	Municipal Area			Rural Area (Excluding Raha M.B. Area Population)			Total
	Raha M.B.Area Population	Total increase	Growth rate per decade	Village Area Population	Total Increase	Growth rate per decade	
1951	2338	-		11583	-		13921
1961	3730	1392	59.53	11923	340	2.94	15653
1971	4359	629	16.86	15777	3854	31.32	20136
1981	-	-	-	-	-	-	-
1991	4879	520	11.92	19432	3655	23.16	24311
2001	8004	3125	64.05	25082	5650	29.07	33086
2011	11030	3026	37.80	25775	695	2.77	36805

Source: Census of India

## 2.3 POPULATION CHARACTERISTICS :

**Table-3:** Existing population of Raha Master Plan Area as per 2011 census

Sl. No.	Master Plan Area 2046	Population (2011)	P.C (%)
1	Raha Municipal Area (10 wards)	11030	29.97
2.	14 Revenue village	25775	70.03
	Total Population	36805	100 %

Source: Census of India

The total population of Raha Master Plan area as per 2011 census is 36805 out of which 11030 i.e. 29.97 % within municipality area covering 10 Nos. of wards and rural area population is 25775 which is about 70.03% of the total planning area population.

**Table-4 :** Village Wise Population and occupied residential houses of Raha M.P. Area as per Census, 2011

Sl. No	Locations/Villages	Population 2011	Male	Female	Households	Area in sq. Km
1	Dighaldari	2,897	1,472	1,425	579	3.950
2	Tupakuchi	2199	1099	1100	488	2.322
3	Khaigarh	1,389	668	721	274	2.498
4	Hariamukh	3611	1749	1824	768	3.505
5	Garmari	138	68	70	29	2.415
6	Chaparmukh Gaon	1052	521	531	239	2.487
7	Dighali Ati	4225	2,135	2,090	876	2.190
8	Chaparmukh Town	2885	1401	1454	659	0.723
9	Balipara	1447	708	739	258	5.706
10	Mulankata	1886	884	902	380	2.447
11	Buragaon	625	312	313	135	1.723
12	Sora Gaon	2495	1242	1253	499	6.144
13	Joypukhuri	101	49	52	17	1.778
14	Rupahitoli	925	472	453	183	2.527
Total		25775	12848	12927	6574	

**Table-5 :** Ward wise population of Raha M.B. Area as per 2011 census

Sl. No	Ward	Population	Male	Female
1	Ward No - 1	1407	708	699
2	Ward No - 2	1419	721	698
3	Ward No - 3	947	480	466
4	Ward No - 4	894	447	447
5	Ward No - 5	1079	549	530
6	Ward No - 6	719	366	353
7	Ward No - 7	1340	674	666
8	Ward No - 8	917	463	454

9	Ward No - 9	1178	578	600
10	Ward No -10	1131	553	578
<b>Total</b>		<b>11030</b>	<b>5539</b>	<b>5491</b>

Source : Raha M.B and Census of India

As per census 2011, total nos. of wards under Raha Municipal Board was 7 nos. and population was 11030, but the nos. of wards has increased to 10 nos. in the year of 2021.

## 2.4 DENSITY OF POPULATION :

The number of population and the size of development of the town or city implies the density of population. Generally, the pressure of population from rural to urban area increases in search of better jobs, educational facilities, source of income, trade and commerce etc. The density of population of Nagaon District as per 2001 was 604 persons per sq. km. and it has increased to 711 persons per sq. km in 2011 census.

The density of population of Raha Town as per 2011 census was 2129 persons per sq.km and rural area density of population was 715 prsons per sq. km.

## 2.5 SEX-RATIO :

The sex-ratio of Raha town is around 996 compared to 958 which is average of Assam state. The population of children of age 0-6 years in Nagaon Town Area is 11950 which are 10% of the total population. There are 6056 male children and 5894 female children between the ages of 0-6 years. Thus as per the Child sex ratio of the town is 996 which is greater than the average sex ratio.

## 2.6 THE LITERACY RATE :

Litercy rate of Raha town is 78.91% out of which 81.42% males are literate and 76.4% females are literate. There are 25.7% Scheduled Caste (SC) and 28.79% Scheduled Tribe (ST) of total population in Raha town.



**Table-6 : Sex Ratio of Raha Master Plan Area :**

Sl. No.	Raha Planning Area	Population	Sex Ratio	
			Male	Female
1.	Raha M.B Area	11030	5539	5491
2.	Village Area	25775	12848	12927

Source : Raha M.B and Census of India

## 2.7 CASTE :

As per census of India, there are about 25.7% Scheduled Caste (SC) and 28.79% Scheduled Tribe (ST) of total population within Raha Master Plan Area.

## 2.8 SIZE OF THE HOUSEHOLD :

The 2011 Census shown that more than half of the household in the region were medium sized with an average member of 3 to 5. According to census 2011 the medium sized households (3-4) is predominant because of the increasing trends towards nuclear households and rapid urbanization are at higher rate, there will be considerable pressure on housing in coming future. The overall household size of Raha Master Plan Area is 4.4.

## 2.9 POPULATION PROJECTION FOR THE YEAR 2045 :

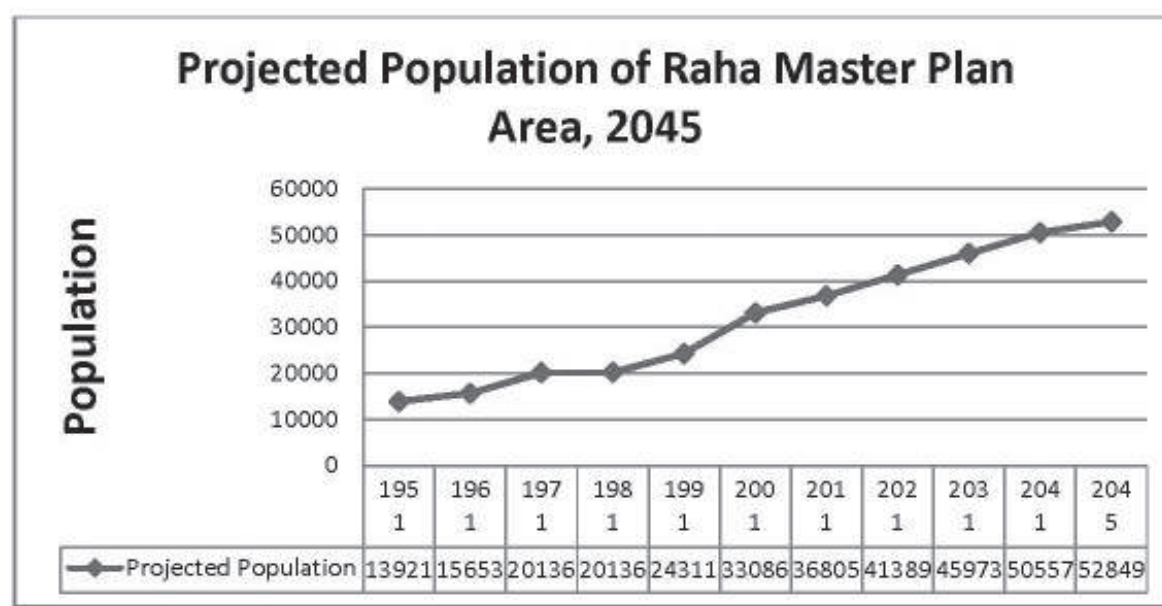
Population projection is a scientific/mathematical attempt to peep into the future population scenario, conditioned by making certain assumptions using data to the past available at the point of time.

It is mandatory for Government policy makers and planners to determine the future demand for basic human needs such as food, water, education, health, energy, and other services and to forecast future demography characteristics.

The population projection of Raha Master Plan area done by utilizing the maximum possible accuracy methods like Arithmetic Increase method and Incremental Increase Method to determine the future population which are shown in the table below :

**Table-7 :** Population Projection of Raha Master Plan Area

Year	Municipal Area						
	Raha M.B.Area Population	Total increase	Village Area population	Total increase	Total Population in the Planning Area	Total Increase	Growth rate (%)
1951	2338	-	11583	-	13921	-	-
1961	3730	1392	11923	340	15653	1732	12.44 %
1971	4359	629	15777	3852	20136	4483	28.63 %
1981*	-	520	-	-	-	-	-
1991	4879	-	19432	3655	24311	4175	20.73%
2001	8004	3125	25082	5650	33086	8775	36.09 %
2011	11030	3026	25775	693	36805	3719	11.24 %
2021	12776 (p)	-	28613 (p)	-	41389 (p)	-	-
2031	14522 (p)	-	31451 (p)	-	45973 (p)	-	-
2041	16268 (p)	-	34289 (p)	-	50557 (p)	-	-
2045	17141 (p)	-	35708 (p)	-	52849 (p)	-	-





## ***Chapter : 3***

### **ECONOMIC BASE AND EMPLOYMENT:**

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The economic base deals with how a community earns its living. It consists of that proportion of employment and income generated in a local community that determines the overall level of production. The growth, decline or stagnation of the local community rests upon the basic economic activity, which goes beyond local needs.

There are several measures of economic activity, but employment and income are the most commonly used in actual case studies. Information about employment and income values are the easiest to find at the county level.

Employment comprises all persons of working age who during a specified brief period, such as one week or one day, were in the following categories of paid employment (whether at work or with a job but not at work); or self-employment (whether at work or with an enterprise but not at work).

The working- age population is the population above the legal working age, but for statistical purposes it comprises all persons above a specified minimum age threshold for which an inquiry on economic activity is made.

The classification by economic activity refers to the main activity of the establishment in which a person worked during the reference period. The branch of economic activity of a person does not depend on the specific duties or functions of the person's job, but on the characteristics of the economic

#### **3.1 FORMAL SECTOR EMPLOYMENT :**

Formal sectors represent all jobs with specific working hours and regular wages and the worker's job is assured. The workers are employed by the government, state or private sector enterprises. It is a licensed organization and is liable to pay taxes. It includes large-scale operations such as banks and other corporations.

From the raw data and T&CP, Nagaon survey team report it is found that out of the total working population in Raha town area only about 40 % populations are engaged in the formal sector of employment.

### **3.2 INFORMAL SECTOR EMPLOYMENT :**

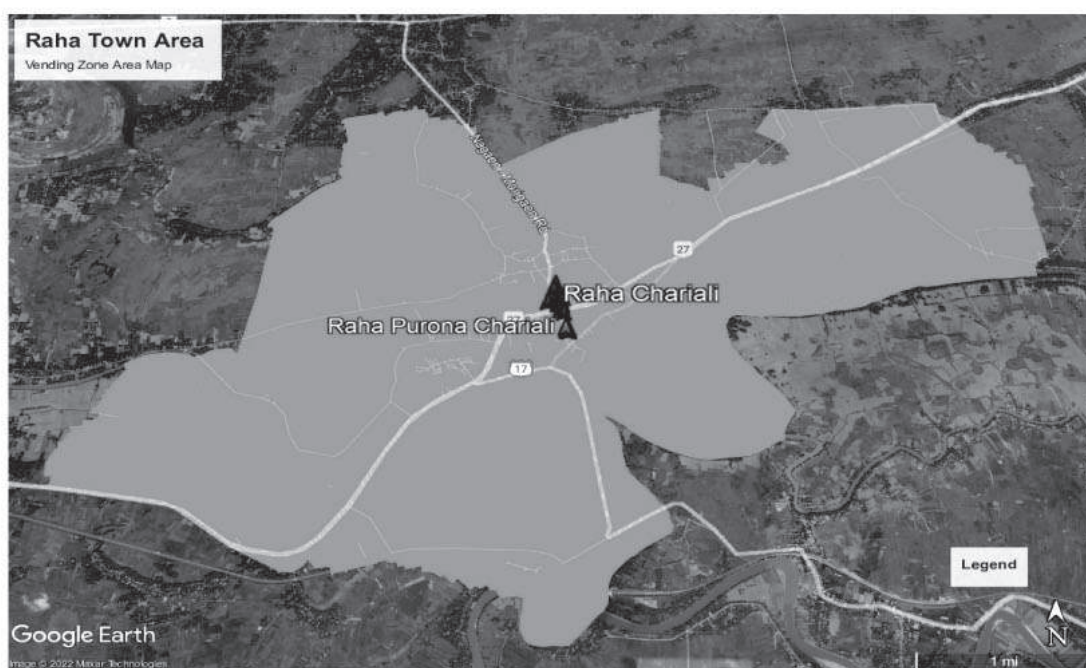
Employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.). The underpinning reasons may be the nondeclaration of the jobs or the employees; casual jobs or jobs of a short duration; jobs with hours of work or wages below a specified threshold (e.g. for social security contributions); or lack of application of law and regulation in practice. In the case of own-account workers and employers, the informal employment status of the job is determined by the informal sector nature of the enterprise. Employers (with hired workers) and own-account worker (without hired workers) are considered to be informal when their economic units belong to the informal sector. All contributing family workers are classified as having informal employment, irrespective of whether they work in formal or informal sector enterprises.

It is observed that some encroachments on the both side of the footpath by the illegal vendors, which acutely rise the traffic congestion at Raha Barapujia road and Raha Main bazar road .



Vendors in Raha Town





Raha Vendors Map

**Table-8** : Formal and Informal sector employment in Raha M.B. Area

Sl. No.	Categories	Nos	P.C
1	Working population	2185	35 %
2	Non working population	6242	65 %
3	Formal sector employment	2497	40 %
4	Informal sector employment	3745	60 %

11030

From the table, it is seen that out of the total working population of 3860, about 40 % populations in Raha town area are engaged in formal and 60 % populations are engaged in informal sector of employment.

### 3.3 OCCUPATIONAL PATTERN :

According to Census of India, worker is defined as person who does business, job, service, and cultivator and labour activity. The capacity of an urban area to provide variety of jobs, absorb its working population in various sectors of economy is an indicator of the economic viability of the urban area. The participation rate also gives us an idea of the share of gainfully employed persons against the dependent and non-working population. Generally the participation rate in the urban area is high compared to the rural area.

Occupation pattern is different of the peoples of Raha Master Plan Area. The rural peoples are mainly based upon the primary sector activities like agricultural and allied activities such as Horticulture, Forestry, Fishery, Animal Husbandry (dairy, poultry, and goat), Floriculture etc.

On the other hand urban livelihoods are based upon secondary and tertiary activities like manufacturing and services etc.

Total population of Raha Master Plan area as per 2011 census is about 36805 persons. Out of the total population about 11778 (32.46%) populations are employed persons. It is seen that about 33.5% employed in the primary sector, 2.96% in the secondary sector and tertiary sector accounts for the rest 66.00% of the employment of Raha Master Plan Area.

In Raha town area , out of 6242 Nos of employed person in 2011 , 11.70% employed in the primary sector, 2.58 % in the secondary sector and 64.96 % employed in tertiary sector. The following tables shows the occupational pattern in Raha town as well as Raha Master Plan Area.

**Table -9 :-** Occupational patterns of Population of Raha M.P Area

Sectors	Raha town		Raha Master Plan area excluding Town area		Raha Master Plan Area	
	No.	%	No.	%	No.	%
Primary Sector	730	11.70	3094	55.89	3824	32.46
Secondary Sector	144	2.30	159	2.87	303	2.58
Tertiary Sector	5368	86.00	2283	41.24	7651	64.96
	6242	100.00	5536		11778	100.00

Source : Economics and Statistical Dept. and T&CP compilation

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**Chapter : 4****HOUSING AND SHELTER**

Housing is one of the most important life components giving shelter, safety and warmth, as well as providing a place to rest. Housing or quality of life is more dependent on some elements of housing areas such as disposition of various working areas, layouts development of land, provision of roads, water supply system, sewerage, drainage and provision of basic amenities like shops, schools, parks and play grounds etc. The urban form and character emerges from the quality of housing areas and inter relationship of housing areas with work centre and other non- residential areas.

Housing is a major element of people's material living standards. It is essential to meet basic needs, such as for shelter from weather conditions, and to offer a sense of personal security, privacy and personal space. Good housing conditions are also essential for people's health and affect childhood development.

The urban housing is mainly restricted to within the Municipal boundaries. The residential areas outside the municipal areas are rural housing. Normally the rate of housing spread of town should range between 6-7 hectare per 1000 persons and the rate of housing spread within the Master Plan Area is around 22 Hectare per 1000 persons.

**Table-10 :** Ward wise population distribution and Nos. of households of Raha Municipal Area

Ward No.	Population as per 2011	No. of household	Housing size
Ward No - 1	1,407	228	6.1
Ward No - 2	1419	143	6.6
Ward No - 3	947	227	4.1

Ward No - 4	894	240	3.8
Ward No - 5	1079	303	3.6
Ward No - 6	719	289	3.3
Ward No - 7	1340	264	5.0
Ward No - 8	917	288	3.2
Ward No - 9	1178	273	4.4
Ward No -10	1131	234	4.9
<b>Total</b>	<b>11030</b>	<b>2489</b>	<b>4.7</b>

**Table-11 :** Village Wise Population and occupied residential houses of Raha M.P. Area as per Census, 2011

Sl. No	Locations/Villages	Population 2011	Male	Female	Households	Area in sq. Km
1	Dighaldari	2,897	1,472	1,425	579	3.950
2	Tupakuchi	2199	1099	1100	488	2.322
3	Khaigarh	1,389	668	721	274	2.498
4	Hariamukh	3611	1749	1824	768	3.505
5	Garmari	138	68	70	29	2.415
6	Chaparmukh Gaon	1052	521	531	239	2.487
7	Dighali Ati	4225	2,135	2,090	876	2.190
8	Chaparmukh Town	2885	1401	1454	659	0.723
9	Balipara	1447	708	739	258	5.706
10	Mulankata	1886	884	902	380	2.447
11	Buragaon	625	312	313	135	1.723
12	Sora Gaon	2495	1242	1253	499	6.144
13	Joapukhuri	101	49	52	17	1.778
14	Rupahitoli	925	472	453	183	2.527
<b>Total</b>		<b>25775</b>	<b>12848</b>	<b>12927</b>	<b>6574</b>	



#### 4.1 HOUSING CONDITION :

Housing condition includes the study of housing base on type of structure i.e., permanent/ semi- permanent, physical infrastructure, mass space relationship, condition of the material use for walls and floors etc. It is important to be studied because it indicates the efficiency and sustainability of the housing stocks, whether the houses are livable or not. Based on the above said parameters, the condition of houses has been segregated and the analysis is done as good, livable and dilapidated houses of Raha Municipal Area comparing with Nagaon District.

**Table-12 :** Housing condition

Residence (%)				
Area	Total	Good	Livable	Dilapidated
Assam	62,72,151	33%	56%	11%
Nagaon District	5,53,106	30%	57%	13%
Raha M.B	2489	54 %	41 %	5 %

Source: Census of India, 2011 and T&CP, Nagaon Compilation

#### 4.2 CONSTRUCTION MATERIAL OF HOUSE:

The survey carried out by Town and Country Planning, Nagaon in 2020-21 and as per Census of India, 2011, it is found that the overall housing condition in the Raha Master Plan area is quite satisfactory. Though the percentage of R.C.C structure is less in the planning area, the semi pucca structure occupies more than 76% of the total houses. The following table shows the condition of existing housing stockes of Raha Master Plan Area

**Table-13 :** Materials used for roof

Area Name	Total Number of HHs	Grass/ Thatch/ Wood/ Mud	Plastic Polythene	Handmade Tiles	Machin e made Tiles	Burn t Brick	Stone / State	G.I/ Metal/ Asbestos/ sheets	Concrete	Any other Material
State	62,72,151	18.60 %	2.10 %	0.70%	0.3%	0.1%	0.80 %	74.20%	2.90 %	0.20%
District	5,60,857	26%	3%	0.00%	0.0%	0.0%	1.00 %	69%	1%W	0.00%
Raha M.B	2489	0.25 %	0.35 %	0.00%	0.0 %	0.0%	1.00 %	87.12 %	11.28 %	0.00%

Source : Census of India, 2011

**Table-14 :** Materials used for walls

Area Name	Grass/ Thatch / Bambo o etc.	Plastic/ Polythene	Mud/ Unburnt Brick	Wood	Stone not packed with mortar	Stone packed with mortar	G.I./Metal/ Asbestos sheets	Burnt Brick	Concrete	Any other Material
State	66.40%	0.60%	3.60%	1.60 %	0.70%	1.40%	1.10%	21.20 %	2.90 %	0.50%
District	67%	0%	4%	2%	1%	2%	0%	19%	3%	1%
Raha M.B	21 %	0.00 %	1 %	1%	1.5 %	14%	1 %	45 %	16.5 %	0.4 %

Source : Census of India, 2011

**Table-15 :** Materials used for floor

Area Name	Mud	Wood/ Bamboo	Burnt Brick	Stone	Cement	Mosaic/ Floor Tiles	Any other material
State	78.60	2.10	1.20	0.40	16.60	1.00	0.10
District	83%	0%	1%	0%	15%	0%	0%
Raha MB	17.22 %	0.00 %	11.01%	5.21 %	63 %	3.23 %	0 %

### 4.3 Availability of Latrine and Bathroom :

As per 2001 Census about 88.10% of households have sanitary latrine and Bathroom and 11.9% of the households have other type of latrine in the Raha Master Plan Area.

### 4.4 HOUSING STOCK AND FUTURE REQUIREMENT:

The housing requirement is more in the urban area than that in the rural areas. Almost all people in rural area have got their own house. The total housing stock and future requirement of houses up to 2045 in the Raha Master Plan Area were calculated based on the city/ town level data on the houseless population and pavement dwellers, the houseless population is derived from the data published as part of Census of India, 2011. The total requirement of dwelling unit in the planning area as per the planning norms is as follows:-



#### 4.5 Housing Requirement for future Population of Raha Town Area till 2045 :

17141-11030 Nos =6111

Assuming family size of 5 persons, new houses will be required

$6111/5 = 1222$  Nos.

Housing Requirement for future Population of Raha Rural Area till 2045.

35708-25775= 9930

Assuming family size of 5 persons, new houses will be required

$9930/5 = 1986$  Nos

Housing Requirement for future Population of Raha Master Plan Area till 2045

52849-36805 = 16044 Nos

Assuming family size of 5 persons, new houses will be required

$16044/5 = 3209$  Nos.

**Table-16 :** Total housing stock and future requirement of houses :

Sl. No	Area	Total no. of housing stock as per 2011	Housing requirement up to 2045
1	Raha M.B Area	2489	1222 Nos
2	Rural Area	6111	1986 Nos
Total		8600	3209 Nos

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## ***Chapter : 5***

# **TRANSPORTATION**

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An effective transport system offers social, economic, political and cultural advantages like accessibility to markets, infusion of investors, distribution of resources, etc that result in an indirect impact on the growth and development of a country. It can be measured in terms of added value and employment .A mode of transport is a solution that makes use of a particular type of vehicle, infrastructure, and operation.

Transportation plays a major role in the daily life of human beings. It is necessary for things to be moved around and as transportation systems have developed over time, the speed and efficiency of these systems have improved drastically.

The importance of transportation is showcased in how individuals, businesses, and governments rely on it to access resources. A society cannot function optimally if it does not have measures in place to facilitate transport. From movement to work to travel around the world, being able to arrive at various places or deliver different items on time is vital for overall productivity and sustainable development.

In consideration of healthy growth, economic prosperity and improved living standards of a town or a city, a high- quality transportation network is essential. In addition, transportation and land use are to be integrated to achieve reduction in trip length, increase in public transports usage etc.

## **5.1 TRANSPORTATION NETWORK :**

### **5.1.1 Regional Connectivity of Raha :**

Raha is well connected to Assam major cities like Nagaon, Guwahati, Jorhat, Karbianglong, Morigaon through PWD roads to State highways via National highways which further connects to rest part of Assam in particular and India as a whole.



## 5.2 NETWORK OF ROAD :

Roads are part of urban and rural infrastructure. These roads are required for both intra-city and intercity movement and render much higher level of service compared to Regional Roads, State Highways and National Highways. Quality of life is depends on efficient and effective road system, of course, with the support of other infrastructural services such as water supply, sewerage, drainage, electricity, telephones etc. in order to perform social, economical & cultural activities.' Urban transportation network is required to facilitate movement of people and goods and therefore efficient network is necessary for their efficient movement.

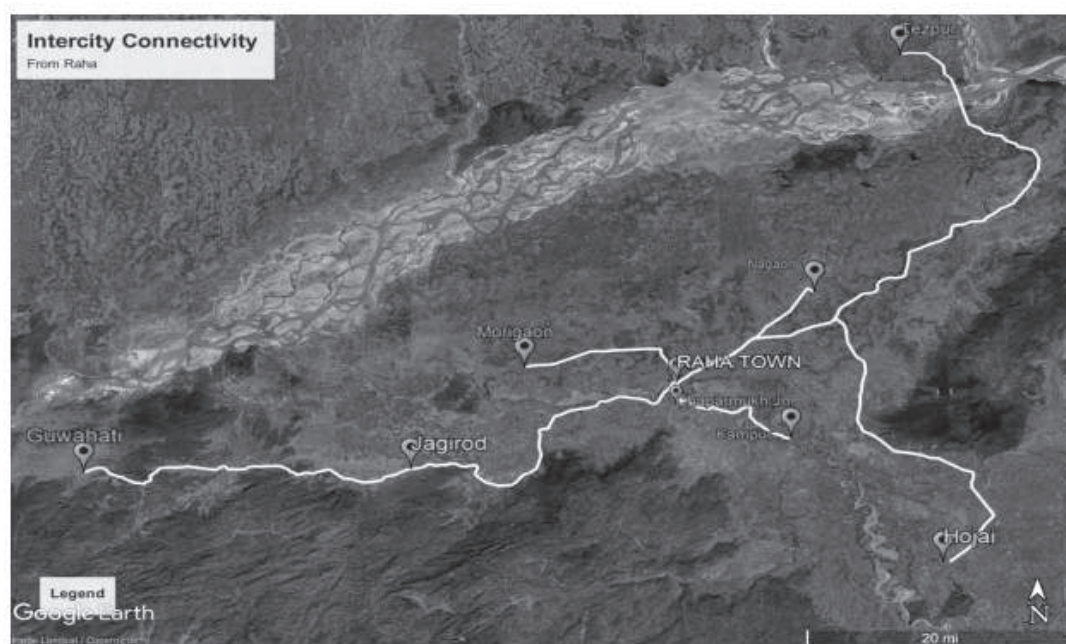
Importance of Urban roads is increasing on account of the fact that urban areas are increasing in their size and number.

## 5.3 INTERCITY CONNECTIVITY (From Raha) :

Raha has the intercity connectivity by road as well as by rail. The table below shows to various modes of transportation and its connectivity with the nearest towns/cities like Nagaon, Tezpur, Guwahati, Jagiroad, Hojai, Morigaon, Chaparmukh Jn etc.

**Table-17** :Modes of transportation and its connectivity with the nearest cities/towns

Urban centres from Raha	Distance (KM)	Time (hrs.)	
		By Road	By Rail
Chaparmukh Jn	5.9	14 min	30 min
Nagaon	22.1	29 min	56min
Morigaon	21.3	33 min	-
Kampur	24.4	44 min	-
Tezpur	84.4	1h 37min	-
Guwahati	102	2h 07 min	2h 35 min
Hojai	71.2	1h 18 min	3h 12 min
Jagirod	46.8	45 min	1h 03min



Modes of transportation

**Table-18 :** Road Length (in Km) of Raha M. B. Area

Total Length	Surfaced			Unsurfaced
43.40 Km.	WBM/ WMM	BT/CC	Total	13.50km
	9.50 Km.	20.40 Km	29.90 Km	

**Table-19 :** Road connectivity and Distance:

Sl. No.	Road type	Connectivity	Distance
1	National Highway-37	Raha to Nagaon via Bebejia	22.1Km
2	PWD	Raha to Barapujia	4.4 km
3	State Highway-17	Raha to Kamrup	24.5 km
4	State Highway-17	Raha to Chaparmukh Town	5.6 km
5	National Highway-37	Raha to Jagirod	46.8 km



#### 5.4 OVERVIEW OF CRITICAL ROADS :

The identification of critical road links is greatly important to the management and control of the transportation system. Existing works fail to fully consider the influence of the distribution of traffic flow and its dynamic characteristics on critical road link identification.

The study of critical roads mainly depends upon several factors like traffic conditions, road geometry characteristics, environmental factors etc. Field traffic surveys were carried out to capture the classified volume count for major arterial, sub-arterial and collector roads spread across Raha Town. Based on the field survey data and traffic volume survey conducted by the T&CP, Nagaon at some major points were ascertained during peak hours. The critical roads in Raha town as well as the Raha Master Plan Area is identified the PWD road Raha to Barapujia, Raha to Chaparmukh Railway Jn, are urgently need to decongest and future plan for widening and improvement to ensure free flow of traffic movement in Raha Master Plan Area.

#### 5.5 ANALYSIS OF TRAFFIC NODES:

The major traffic nodes in Raha town are identified which are detailed as table-20 below:-

Area	Location of point	Description
Raha Town Area	(i)Raha Chariali point	This is a commercial place consist of some shops, daily vegetable market and entry to Raha Circle Office towards south, and daily market towards North
	(ii) Raha Circle Office point	It is also a business center consist of variety of major shops, Pubic gathering Place entry to Raha Muniucipal Board, Post Office, Police Station etc also.
	(iii)Raha Purona Chariali point	It is a fully busiest daily Market area, also way to Kampur, Chaparmukh, Raha College and connected to NH-37 Road.

	(iv)Raha College Road Tiniali point	It is an important traffic intersection and transfer point and consist of commercial and business activities. It is a place of traffic congestion with NH-37 Road and entry to Raha College, A Bricks factory and a some residential areas.
	(v)Tupakuchi point	It is a commercial place comprising with some shops, daily vegetable markets, and entry to some residencial area. Barapujia in the North and Raha Chariali in the South.

### 5.5.1 BUS TERMINUS :

Public and Private Bus stands are most temporarily located at some busy road sides of Raha town which causes the traffic congestion and traffic hindrance. The bus stands located at different places of the town and their characteristics are as given table-21 below:-

Terminal Centre	Location	Observation
A. Inter-City	Bus Station	
I. Passenger	i) Raha- Nagaon Mini Syndicate	Located Raha Chariali area. Parking space is not sufficient. Waiting shed, toilet facilities should be extended. Passenger's guest house facilities should be provided.
	ii) Raha – Kampur and Chaparmukh mini Syndicate	Very congested. Parking space is very narrow. Waiting shed and toilet facilities are nil. Immediately this bus station should be shifted.
	iii) Raha – Barapujia Tempo syndicate	Located at Raha Chariali area. Campus of the Bus station is very narrow, so all the necessary facilities should be improved providing modern technology through proper planning. Waiting shed and toilet facilities are nil. Road side parking.



### 5.5.2 Railway :

Raha is connected by Indian Railways network. There are several trains plying from Guwahati and many other states of India via Chaparmukh Railway Junction and passes through Raha to Silghat, Assam. The North - East Frontier Railway Broad gauge Line from lower Assam to Upper Assam connects Raha to the rest of the other places. Nagaon Railway Station, Chaparmukh Railway, Chaparmukh Railway Junction and Sensuwa Rly. Jn is the only nearest junction Raha Railway station. There is no any direct train running from Raha Railway Station to the rest of others. At present, electrification network with dual track of whole North-East Frontier Railway is under progress under Ministry of Indian Railways, Govt. of India.

The existing platform of Raha Railway Station should be upgraded and waiting shed should be extended. Guest house facilities should be established. Toilet and sanitation facilities are not sufficient to the need of the people. Booking and Reservation Counters should be opened. The platform is required to be upgraded providing all modern facilities. Guest house facilities should be established.



Raha Chaparmukh Jn.

## 5.6 TRAFFIC VOLUME SURVEY

The traffic volume survey in around the particular town or the city is urgently required to find out the possible solutions and improvement suggestions for the problem identified. The objectives covered in it includes identifying hourly distribution of vehicles and peak hour identification of the level of service and compare model composition on different hierarchy of roads etc.

The traffic volume survey conducted by the T&CP, Nagaon only at some main points and it is restricted only to peak hour survey from 9-00 a.m to 11.00 a.m to identify better and efficient traffic operation plan. The following table shows the traffic volume of the 4 (four) main points within Raha Master Plan Area.

**Table-22 : Traffic Volume Survey within Raha Master Plan Area**

Name of the survey point	Time:9:00 A.M to 11:00 A.M							
	In coming				Out going			
	Fast moving		Slow moving		Fast moving		Slow moving	
1 Raha R.C.C. bridge point	Vehicle	Number	Vehicle	Number	Vehicle	Number	Vehicle	Number
	Bus/M. bus-	123	Bi-cycle-	220	Bus/M bus-	117	Bi-Cycle-	205
	Trucks-	103	E. Rickshaw	47	Trucks	105	E.Rikshaw	33
	Scotr/Mcycle-	234	Thela	15	Sctr/M.cycle	125	Thela	22
	Car	154			Car	196		
	Tata Sumu/Majik-	71			Tata Sumu/Magic	64		
	Tempo/Auto-	75			Tempo/Auto	57		
	<b>Total</b>	<b>760</b>	<b>Total</b>	<b>282</b>	<b>Total</b>	<b>664</b>	<b>Total</b>	<b>260</b>



2	Raha Khadi Industries Board point	Time:9:00 A.M to 11:00 A.M							
		In coming				Out going			
		Fast moving		Slow moving		Fast moving		Slow moving	
		Vehicle	Number	Vehicle	Number	Vehicle	Number	Vehicle	Number
		Bus/M. bus-	129	Bi-cycle-	234	Bus/M bus-	142	Bi-Cycle-	296
		Trucks	93	E.Rickshaw-	42	Trucks	100	E.Rickshaw-	32
		Scotr/Mcycle-	205	Thela	25	Sctr/M.cycle-	298	Thela	21
		Car-	298			Car	263		
		Tata Sumu/Majik	69			Tata Sumu/Majik	81		
		Tempo/Auto-	71			Tempo/Auto-	75		
		<b>Total</b>	<b>865</b>	<b>Total</b>	<b>301</b>	<b>Total</b>	<b>959</b>	<b>Total</b>	<b>349</b>

3	Thukula gaon Tiniali Point	Time:9:00 A.M to 11:00 A.M							
		In coming				Out going			
		Fast moving		Slow moving		Fast moving		Slow moving	
		Vehicle	Number	Vehicle	Number	Vehicle	Number	Vehicle	Number
		Winger/M. bus-	43	Bi-cycle-	292	Winger/M bus-	38	Bi-Cycle-	265
		Trucks-	27	E. Rickshaw	47	Trucks	28	E.Rickshaw	35
		Scotr/Mcycle	169	Thela -	34	Sctr/M.cycle	117	Thela	29
		Car	186			Car	167		
		Tata Sumu/Majik-	54			T. Sumu/ Majik	28		
		Tempo/Auto-	47			Tempo/Auto	41		
		<b>Total</b>	<b>526</b>	<b>Total</b>	<b>373</b>	<b>Total</b>	<b>419</b>	<b>Total</b>	<b>329</b>

4	Garmari Tiniali Point	Time:9:00 A.M to 11:00 A.M							
		In coming				Out going			
		Fast moving		Slow moving		Fast moving		Slow moving	
		Vehicle	Number	Vehicle	Number	Vehicle	Number	Vehicle	Number
		Winger/M. bus	43	Bi-cycle-	174	Winger/M bus-	27	Bi-Cycle -	172
		Trucks	12	E.Rickshaw	41	Trucks -	17	E.Rickshaw -	42
		Scotr/Mcycl e-	226	Thela-	31	Sctr/M.cycle-	201	Thela -	23
		Car-	127			Tata Sumu/Majik-	42		
		Tata Sumu/Majik -	55			Tempo/Auto-	38		
		Tempo/Auto -	47			Car	107		
		<b>Total</b>	<b>510</b>	<b>Total</b>	<b>246</b>	<b>Total</b>	<b>622</b>	<b>Total</b>	<b>237</b>

SOURCE : Survey Conducted by Town and Country Planning, Nagaon

## 5.7 PARKING :

Vehicle parking is a major problem in urban areas. With rapid growth of the urban area, the parking generation rate goes on increasing very quickly which creates major problems of parking in most of the urban areas. In the recent years, with the rapid development of economy and exorbitant increase in the motor-vehicles, parking problems in urban area have become increasingly prominent.

On street parking is found all over Raha Town, parking usually spills over to other use areas like road carriageway and footpaths, open spaces. In turn they affect safety and environmental quality. Parking characteristics within the town vary by areas, by land use activities and by time period. In residential areas it is by time period.

At present there is no Municipal identified parking area designated for public and private parking within Raha town as well as Planning Area.. As per parking survey conducted by the Town and Country Planning, Nagaon it is observed



that on street parking is found all over Raha town. On-Street parking is observed to be high on Raha Natun Chariali Road towards East and West and Tupakuchi Area. On street parking at different places of Raha town are observed as below :



**On street parking**

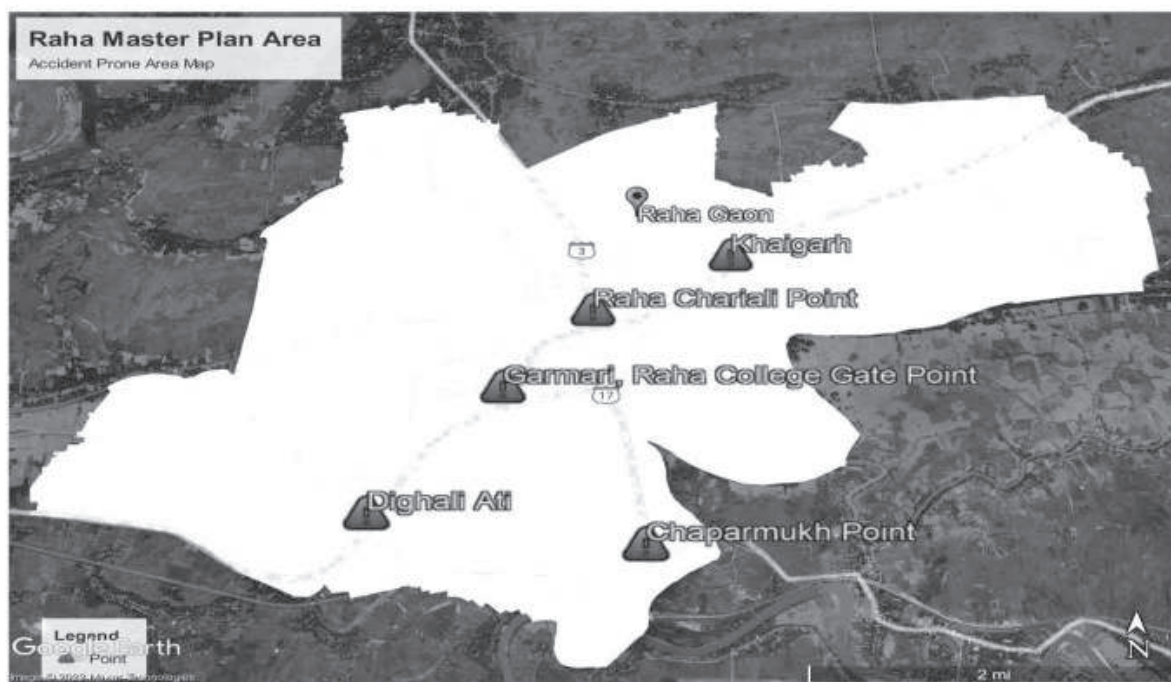


**Near Chaparmukh Jn.**

## **5.8 MAJOR ACCIDENT PRONE AREA :**

As per records available from the Raha Municipal Board and field verification it is found that there are frequent accidents are being happened in Raha Town due to non traffic signal points and uncontrolled speed of the vehicles. Major accident prone areas of Raha town are mentioned as below :

1. Garmari, Raha College Gate point
2. Raha Chariali Point
3. Khaigarh Point
4. Chaparmukh Point
5. Dighali Ati Point



**Map of accident prone Area of RMB Area**

## **5.9 TRANSPORTATION ISSUES AND REQUIREMENTS:**

### **5.9.1 ILLEGAL VENDING ZONE :**

- One of the major issues is of illegal vending on walking shoulders on the main streets.
- Due to illegal vending sometimes the actual accessible patch of road decrease to half lane only.
- If proper spaces are being allocated to street vendors in every zone the issue can be eliminated.
- Due to illegal possession of shoulders the pedestrian come down to road for their local trip and some time proves unsafe on congested area.
- Narrow road network with restricted capacity, particularly due to the illegal vending, resulting in congestion and loss of productivity.
- The problematic areas include intersection Raha Purana Chariali, Raha Natun Chariali, Barapujia Road,

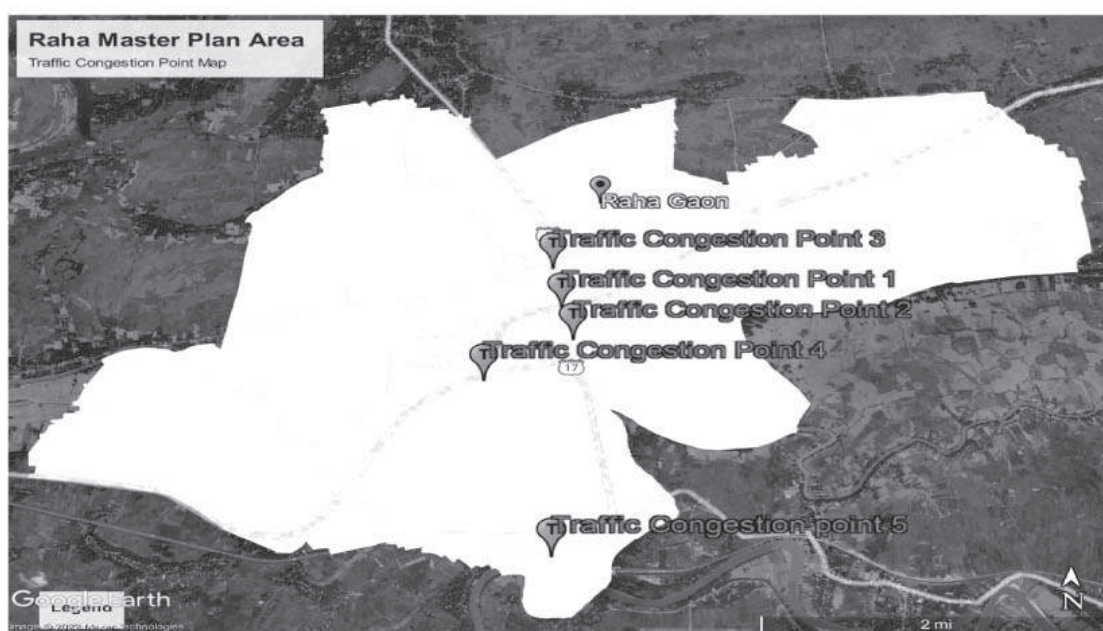
The photographs below depict the current scenario of the illegal vending zones which restricted the capacity of road resulting lead to congestion.



### 5.9.2 TRAFFIC CONGESTION :

- Traffic congestion is quite common in Raha Town and it takes a lot of time to commute for the commuters.
- At many places geometry of the town is very less as they have not followed any norms and standards for the road pattern as well as for other related things like road cross sections and railway level crossing etc.
- Observed encroachments on the footpath by vendors, which acutely rise the traffic congestion between include intersection Raha Chariali, Raha purona Chariali road, Chaparmukh Jn. Area, Raha State Bank Of India have this illegal vending and parking on both sides of the road and the resultant traffic need to resolve.

The highlighted light pink dots on map within town area shows the frequent congested road patches.



Traffic Congestion map

### 5.10 ROAD ENCROACHMENTS :

- Many factors can be listed out for such happenings, but few observations are mentioned below, which are
- Unauthorized parking of vehicle on pavement only.
- Many spots with exposed electric poles on pavement sides which leads to make space dead and potential for parking wheels.

- The town suffers from parking problems due to encroachment by vendors on road and off-street parking. As a result, the road width decreases and there is no space remaining to pass the vehicles or to give space to other vehicles.
- There is no designated space for parking in whole town.
- There are encroachment issues in areas namely both sides of Raha Purana Chariali to Raha Natun Chariali, Near Raha Chariali Petrol pump.
- Due to lack of space, it is difficult for vehicles to pass on.
- Also, Proper facilities are needed for loading, uplifting, and downloading.
- Encroachment on both sides of the road decreases the effective width which may cause road accidents and disturbs the smooth flow of traffic.

#### **5.11 TRAFFIC SIGNAL POINTS :**

There is no organized traffic signal points in Raha town. Various junctions without traffic signals are there in the town area like-Raha Natun Chariali point, Raha Purana Chariali point and Tupakuchi Chariali point, resulting in unnecessary traffic jams and more requirement of traffic brigade occurs.

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## *Chapter : 6*

# **INFRASTRUCTURE, PUBLIC UTILITIES & SERVICES**

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The development pressure on towns and cities is increasing with the rising urban population and growth of urban areas. The development of cities in itself is dependent upon the public infrastructure services. The creation of urban infrastructure is expensive and time consuming. Therefore it requires the Government to play a major role in making lumpy investments.

A country's economic and social development is directly dependent on a country's infrastructure. Many developed countries make a lot of progress because of the enormous growth of economic and social infrastructures. A good infrastructure makes the work process easier, resulting in a positive and high productivity.

Urban infrastructure development is the foundation of every city and remains the key to ensuring basic services like water, sanitation, drainage, energy, and transport. With proper and planned urban infrastructure development, residents can enjoy better living conditions & live healthier lifestyles while benefiting from enhanced environmental sustainability.

Social Infrastructure is a subset of the infrastructure sector and typically includes assets that accommodate social services like Health, Education, Housing, Civic and utilities, Transports etc.

## **6.1 SOCIAL INFRASTRUCTURE :**

Social infrastructure plays an important role to provide quality of life to the residents of the city. The effectiveness of social infrastructure in achieving the objective of city development plan would depend upon its capacity to contribute to improvement in the quality of life, enhanced self-dependency and city's sustainability. The level of social infrastructure shall aim the creation of liveable city through reducing the sense of alienation among the residents with less dependence on other settlements for basic infrastructure.

Social infrastructure refers to the facilities and mechanisms that ensure education, health care, community development, and social security, recreational and social welfare. The development cannot be looked at in isolation without considering the basic needs of the people, and a significant level of investment is needed in this sector. Usually this development referred to as the commitment towards realizing the vision of the city.

### 6.1.1 EDUCATION

Education is an important factor influencing the quality of life of the people and future development of an area. It empowers them with skills and knowledge and helps them to better lead their life and access best of the employment opportunities available in the market. This in turn will impact the work force participation rate and economy of the area. There are many government and private schools, colleges in Raha town. The existing scenario of Primary, Middle school and Higher secondary school and Govt. and private Colleges in Raha area is shown in the table given below:

**Table 23 :** Educational Facilities available in Raha Master Plan Area

Sl. No.	Category of Educational Institutions	Total Number of Institutions within Raha Master Plan Area	Enrolment	Teachers
1	Lower Primary Schools	27	1780	104
2	Middle School	7	825	44
3	High School	6	1443	74
4	Higher Secondary School	2	1122	50
5	1) Raha College	1	2640	25
	2) Junior Colleges	-	—	—
	3) B.Ed College	-	—	—
	4) Commerce College	-	—	—
	5) Law College	-	—	—
	6) Homeopathic	-	—	—
	7) Polytechnic	—	—	—
	8) I.T.I	—	—	—
	9) Fishery college	1	150	23

Source : Inspector of Schools, Elementary and Higher education



**Raha College****Raha fishery college****Gopinath Bardaloi H.School, Raha**

### 6.1.2 HEALTH :

Health facilities are places that provide health care. They include hospitals, clinics, outpatient care centers, and specialized care centers, such as birthing centers and psychiatric care centers. Health facilities is very poor in Raha town Area compared with the village Area. It is not sufficient to meet the needs of the demand of the peoples. There is no Private Nursing Home and Maternity Centre in the town. As per data available following table shows the medical facilities within Raha Master Plan Area.

**Table-24** : Medical facilities within Raha Master Plan area

Sl. No.	Raha Planning Area	Health Centres	No. of Beds
1.	Raha M. B. Area	1. State Health Centre, Raha	30
2.	Village Area	2. C.H.C, Raha Ranthali	
		3. Health Centre , Jungal Bolohu	-
		4. Health Centre, Hariamukh	-
		5. Health Centre, Saragaon	-
		6. Health Centre, Dighali ati	-
		7. Health Centre, Chaparmukh	-
		8. Railway Hospital, Chaparmukh Rly. Jn.	-
		9. Health Centre, Chaparmukh	-
		10. Health Centre, Garmari	-

Source : Raha M.B. and T&CP survey



### 6.1.3 WATER SUPPLY :

Water supply system in Raha town is conducted by PHE Department. Piped water is supplied to a section of the people of the town area and rest of the population depends upon individual source of water like ponds, ring wells and tube wells. The underground water reserve of the town is in a satisfactory condition hence it is felt that there will not be shortage of water for distribution



in the town. Besides this, Kalong and Kapili river is passes near the town from which water can be trapped for distribution if required in future for the projected population.

At present there are about 292 households have water supply connection and 45 Nos of Water supply street tap stand within Raha Master Plan Area.

#### **6.1.4 POLICE STATIONS :**

Raha Master plan Area is controlled by Raha police station which is located in the heart of the Raha town.



Raha Police Station

#### **6.2 TRADE AND COMMERCE :**

In case of commercial activities Raha Town has been growing like other towns of Nagaon District. As per data available from the Raha Municipal Board the total No. of retail shops in the Town Area is 217 units and 14 No. of wholesale units.

**Table-25 :** Data regarding Trade and Commerce within Raha Municipal Area :

Sl. No	Type of business Units	Nos. of business Units	
		Wholesale	Retail sale
1	Grocery	6	69
2	Cloth		32
3	Medicine	2	14
4	Cycle shop	-	6
5	Hardware( cement dealer)	-	1
6	Electrical shop	-	15
7	Radio & T.V	-	2
8	Fruit shops	1	6
9	Egg shop	2	5
10	Jeweler	-	14
11	Hardware	-	10
12	Rice	2	1
13	Motor tyre dealer	-	2
14	Fertilizer	1	2
15	Optical shop	--	1
16	Meat shop	-	7
17	Timbers	-	3
18	Radio & Sewing machine	-	16
19	Diary	-	2
20	Scooter & Motor cycle dealer	-	5
21	Book stall	-	4

There are 5 (five) daily markets within raha Planning Area and 2 (two) weekly markets. Following table depicts the markets within Raha Master Plan Area.

**Table-26 :**

Sl. No.	Markets within Raha Mater Plan Area	Name of market
1	Raha Town Area	1. Raha Natun bazar chariali to Puranachariali daily market
		2. Thukulagaon Tiniali daily market
2	Village Area	3. Saragaon daily market
		4. Dighali ati daily market
		5. Chaparmukh town daily market



3	Weekly market	6. Sunday weekly market at Raha town
		7. Wednesday weekly market at Raha town

Source : T&CP, Nagaon Survey

### 6.2.1 CREMATION /BURIAL GROUND:

In Raha Master Plan Area total 15 Nos. of cremation grounds and only 1 (one) burial ground which is located at Dighaliati as shown in the table-28 below:

Sl. No.	Location	Number of Cremation Ground	Number of Burial Ground
1	Raha Town	3	Nil
2	Tupakuch	1	Nil
3	Khaigarh	1	Nil
4	Garmari	1	Nil
5	Chaparmukh Gaon	2	Nil
6	Dighali ati	1	1
7	Dighaldari	1	Nil
8	Balipara	2	Nil
9	Mulankata	2	

Source:- Raha Municipal Board

The existing cremation and burial grounds should be developed with the basic facilities like roads, waiting shed, water supply, electricity and drainage etc.

### 6.2.3 POST OFFICE :

There are 2(two) post office within Raha Master Plan area, one is within Raha Municipal Area and the another is situated at Chaparmukh town which are not sufficient to meet the need of the demand of the peoples.



Raha Post Office

#### 6.2.4 FIRE STATION :

The entire Master Plan area of Raha is covered by one Fire Station and it is situated in raha town area.

#### 6.2.5 BANKS/FINANCIAL INSTITUTIONS :

Raha Planning area is served by 9 (nine) nos. of Banks and the banks located within the planning area are shown in the table below:

**Table-29 : Banks in Raha Municipal Area :**

Sl. No.	Name of Banks	No. of banks
1	PUNJAB NATIONAL BANK	1
2	STATE BANK OF INDIA	1
3	BANK of India	1
4	U.B.I	1
5	ASSAM GRAMIN VIKASH BANK	2
6	NORTH EAST Small BANK	1
7	BANDHAN BANK	1



### 6.3 RECREATIONAL FACILITIES :

Recreational facilities plays an important role in providing venues for physical activity in urban areas. The facilities are incredibly important for a healthy, vibrant community, and for citizens reaping the benefits of having a health community. Following table depicts the available of recreational facilities in the Raha Municipal Area as well as the Planning Area.

**Table-30 :** Recreational facilities within Raha Master Plan Area :

Sl. No.	Recreational facilities	Nos. along with Name and Location
1	Parks	Nil
2	Playground	Central Sports Field Raha
3	Stadium	Nill
4	Library	Nill
5	Museum	Gopinath Bardaloi Museum
6	Cinaema Hall	Nill
7	Public Auditorium	Nil
8	Swimming Pool	Nill

Source: Raha Municipality Board

#### 6.3.1 DRAINAGE SYSTEM :

The existing drainage facilities are not sufficient in Raha town Area. Most of the new residential areas have grown without having drainage facilities. As per data received from the Raha Municipal Board, the total drain length of Raha M.B. Area is 44.72 Km. and out of the total length, 22.72 Km. is R.C.C and 22.00 Km. is Kacha drain. As the Kalong and Kapili River passes near the Raha town, a major part of the storm water generated in the town flowed out to the Kalong and Kapili River. Below table shows the length of drains.

**Table-31** : Drain Length of Raha Town Area

Sl. No.	Toal drain lenght	Length in Km.	
		R.C.C.	Kachha
1	44.72 Km	22.72	22.00

Source : Raha M.B

### 6.3.2 SEWERAGE SYSTEM :

At present there is no sewerage system in Raha town as well as in the planning area. The mode of disposal is through the septic tanks with soak pits arrangement. Most of the families day to day washables dirty water and the bathroom water is disposes in own soak pits. Some of the families washable water discharge is into the open municipal drains. Almost all the holdings in the town have individual septic tank. There are no dry latrines.

### 6.4 SOLID-WASTE MANAGEMENT :

The management of municipal solid waste is one of the main functions of all Urban Local Bodies (ULBs) in the country. All ULBs are required to meticulously plan, implement and monitor all systems of urban service delivery especially that of municipal solid waste. With limited financial resources, technical capacities and land availability, urban local bodies are constantly striving to meet this challenge.

As per data received from Raha Municipality Board total waste generated per day in Raha town is approximately 1 metric tons and collects about 0.5 tons (50%) from various source like households, commercial establishments , hotel, marketplace, drain cleaning and street sweeping, construction waste etc. Presently, following table depicts the nos. of vehicles and other equipments used for solid waste management system by the Raha Municipality Board.



**Table-32** : Vehicles and other equipments used for solid waste management system.

Sl. No.	ITEM	NUMBER
1	Roller	Nil
2	Tractor	1
3	Tempo van	1
4	Rog Machine	Nil
5	Tripper	5
6	Mini JCB	Nil
7	Water tank	Nil
8	Hydraulic Dustbin	Nil
9	JCB (Big)	Nil
10	Safai Kormosari	8
11	Cesspool cleaner	1
12	Street loader	2
13	Tractor trailer	2

Source : Raha M. B

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## ***Chapter-7***

### **ENVIRONMENT AND CITY BEUTIFICATION PLAN**

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#### **7.1 DESCRIPTION OF ECO-FRIENDLY AREAS LIKE WATER BODIES; BEELS; FORESTS; AND ALSO HERITAGE AREAS :**

Eco-friendly literally means earth-friendly or not harmful to the environment (see References 1). This term most commonly refers to products that contribute to green living or practices that help conserve resources like water and energy. Eco-friendly products also prevent contributions to air, water and land pollution.

##### **7.1.1 ECO-FRIENDLY AREAS OF RAHA:**

###### **Kolong:-**

River Kollong is a spill channel of river Brahmaputra having its intake point near Jakhalabandha in between Kukurakata hill and Hatimura hill. The river traverses about 199.67 Km through Nagaon and Morigaon district and finally outfalls into the river Brahmaputra near Chandrapur in Kamrup district. The river meets streams like Diyu, Missa and rivers like Killing, Kopili and Digaru along its course.

The hydrology and topography of the catchment area of the river Kolong was such that apart from receiving water from the hilly streams, the river carried the flood water from the over flooded Brahmaputra river inundating the low-lying areas of Nagaon and Morigaon district and creating havoc among the people. Even the Nagaon town was under threat due to such flooding by Kolong River. The whole course of the river basin is basically divided into two natural divisions as Upper Kolong sub basin and lower kolong sub basin. The Upper Kolong sub basin starts from the point of the origin of the River and extended upto Nagaon Town, covering an approximate length of 50 Km. The lower basin starts from the Nagaon Town through Raha town and spreads up to Hilokhunda area of Morigaon District, covering an area of more than 110 Km. During its course, kolong is fed with several rivulets namely Diyu, Misha, Haria, Nonoi,



[illegible]

Kolong

**Issues :**

In present studies, the river kolong is selected for water quality evaluation and it is a preeminent example of a degraded River of North –east India. Kolong a by-channel of a river Brahmaputra with a total length of 250 k.m originates from a place near Jakhalabandha (Nagaon district, Assam) in between two hills viz. Hatimura and Barjhap area and flows through Nagaon and Morigaon District. The principle tributaries of kolong river are Misa, Dizu, Haria and Digaru. All these tributary drawing runoff from the southern part of the basin. Role played by kolong river in determining the economy of the region is highlighted in Hunter's "Statistical Account of Assam" which mentioned the sailing of ships through the heart of kolong river between silghat to raha, thus serving as a vital economic link. Unfortunately, as an aftermath of the 1950 Great Assam earthquake, there were topographical changes of river bed and its surroundings, and as a result, the ares of the basin were subjected to flood inundation upto in 1963. Although, the flood problem of the kolong river basin after the construction of dykes and embankments at different location was minimized but it has given rise to subsequent problems as mention below:-

As the entry of water to Kolong River, was stopped by the dyke stated above, the flood in the lower reach of Kolong River was greatly hampered. As such rain water collected in the paddy fields on either side used to escape and channelize through kolong.

In the past, kolong river water was used for different purpose by latge section of rural population of the district. After the closure of the mouth of the kolong, the water becomes dirty and the villagers had to use the available dirty and contaminated water for their day to day use.

The migration of fishes from Brahmaputra to kolong was entirely stopped thus disturbing the auto-stocking capacity of the water-bodies, leading to low fish productivity.

Although, River kolong is recognized as one of the polluted river in N.E India, there is no any polluted stretched has been found or identified of kolong under Kampur Circle area. However, some of the polluted stretched identified as a whole of kolong river were Diphalu to kutayani (Nagaon Circle, 7.5 Km), Banthaigaon to Baghzap ( Morigaon District, 1.5 Km).



**Kopili:-**

The River Kopili is one of the important major tributaries of the Brahmaputra on its left bank. It originates from the Saipong Reserve Forest situated in south east of Meghalaya and passes through the borders of Meghalaya, North Cachar hills and karbi anglong and enters the plains in Nagaon district of Assam and finally joins the Brahmaputra at Kopilimukh. Its total length is 256 km of which 78 km from the common border of Meghalaya and Assam and the remaining 178 km lie in Assam.

Kopili River is an interstate river in Northeast India that flows through the states of Meghalaya and Assam and is the largest south bank tributary of the Brahmaputra in Assam. The river Kopili rises in the North Cachar Hills District in Borail Range at an altitude of 1525 meter. Then it passes through Kopili Ghat, Penumbra, Kheroni, Rajagoan, Kampur, Amsoi, Kumoi, and Mayang.

The Kopili Hydro Electric Project, located across the districts of Dima Hasao in Assam and Jaintia Hills in Meghalaya and run by the North Eastern Electric Power Corporation, consists of the Khandong and Umrongso dams and their reservoirs and three power houses that have a total installed capacity of 275 MW.

**Issues :**

- (a) Dam induced Flood:- Raha is one of the towns located in the down streams of Kopili Dam. Dam induced flood is major problems for the people living in downstream areas. The kopili dam has changed the character of flood in the river downstream for the worse.
- (b) Acid contamination due to open cast mining.
- (c) Ground water depletion in downstream areas
- (d) Environmental issues

This river is also facing a tremendous pollution threat from its riparian areas, especially in its upper stretches due to anthropogenic activities. The Central Pollution Control Board (CPCB) in one of its report has placed the Kopili river in 4th rank among the 56 most polluted river of North-East region.

**Eco-Sensitive Area and wetlands area within Raha M.P:-**

Eco-Sensitive Zones (ESZs) or Ecologically Fragile Areas (EFAs) are areas in India notified by the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India around Protected Areas, National Parks and Wildlife Sanctuaries. The purpose of declaring ESZs is to create some kind of "shock absorbers" to the protected areas by regulating and managing the activities around such areas. They also act as a transition zone from areas of high protection to areas involving lesser protection.

There are so many small to big beel, dubi were found within the Raha Planning area both free and water logged which has its own unique ecosystem and rich in aquatic living being. These areas are often dominated by grasses, rushes or reeds provide habitats for many kinds of invertebrates, fish, amphibians and aquatic mammals. They were (1) Ranthali Beel (2) Nimajaan Dubi (3) Hati-Bandha (4) Balipara Beel.

**7.2 BIODIVERSITY OF THE THESE BEELS AND DUBI'S**

Flora:- Various types of flora and fauna are found in Dighali Beel. Beel is rich in floral diversity. Some of the flora found were Bih Mateka, Dal Ghah, Boss, Jora, Kola kochu, Mati Kanduri, kalmou, sorupani, Pani meteka, Pani lokosi, Bhet, Bihlongoni etc.

Fauna:- Rich in faunal diversity include various types of aquatic birds and fishes. But due to several anthropogenic activities create threat to reduce these diversities. Dominant aquatic birds found were Sarali hah, Samukvanga, Bogoli, Dolghora, Pani Kauri, Dawk, Dolmoura, Dhak and seasonal migratory birds. Common fishes found in the beel were puthi, Mao, Daikana, Singi, Sal, Soul, cuchia, Borali, Dhekera etc.





Eco-sensitive and Wetland area of Raha M.P.A

There are so many small and big sized artificial ponds or fisheries under Fishery Department as well as private which are used as fish farming and allied culture at different locations within R.M.P area. Fishery sector with commercial purpose contributes considerable percent to the state Gross Domestic Products. It provides livelihood to the people and boosts the state economic development. Therefore fish farming with other allied culture in a scientific way should be encouraged in the Planning area, so that it can provide livelihood to the people and economic development.

#### Issues :

**Loss in aquatic Biodiversity:-** Basically the beel is the home of various fauna and flora. Due to more human encroachment mainly for agricultural purpose using fertilizers, the quality of the water body starts to degrade which leads to decrease aquatic flora and fauna.

**Extraction of fishes and Birds:-** Extraction of fishes and illegal poaching of birds from it also increasing in present day. It harms the local fish species and extinction of some local species. In recent days due to illegal poaching of birds hamper the attraction of the water body for the migratory birds which are now decreasing day by day due to human presence and loss of natural vegetation. There is every possibility to develop a site of recreation where people can enjoy the natural beauties and refresh themselves.



**Requirements :-**

For wise use of water body resources, it is very important to assess the impact of socio-economic factors upon the water body environment in regards of management plan. For proper management resources several steps should be taken to protect the water body from encroachment and strict law should be implemented for their protection to illegal encroachment. Alternative means of livelihood should be generated for the people who depend upon water body resources for their survival. It will reduce the exploitation of water body resources and killing of fish and fauna. Efforts should be made to educate the local people and create awareness about the importance of management and conservation of this water body. Successful management of water body resources depends upon how properly concern authorities adopt appropriate plan and in what way it should be implemented.

**7.3 HISTORICAL SITES OR A PLACE :**

A historic site or heritage site is an official location where pieces of political, military, cultural, or social history have been preserved due to their cultural heritage value. Historic sites are usually protected by law, and many have been recognized with the official national historic site status. A historic site may be any building, landscape, site or structure that is of local, regional, or national significance. Usually this also means the site must be at least 50 years or older.

**Jongol Balahu Garh :-**

History: The King 'Arimatta' and his son 'Jongal Balahu' is shrouded in mystery and many legends cluster round them. Arimatta , a local adventurer, subdued the Bar Bhuyans and then occupied Kamata in 1365-85 A.D. Arimatta's name is also associated in a Nishi legend related to the Hita fort in present Itanagar in Arunachal Pradesh. Arimatta may have had his seat of power at Vaidyagarh near present Rangia , the ruins of which is still extant. It is said that the high embankments known as Jongal Garh in the area are remains of an old fort of Jongal Balahu. The site is said to have been the capital of Jongal Balahu who ruled over the region after his father Arimatta's death. Later Jongal Balahu was defeated in a battle by the Kacharis and drowned himself in the "Kolong" river, Raha. Place/Kingdom: Raha Baropujiya (1365-85 A.D.)





Jungal Balahu Garh

Recently a statue of the great Tiwa King, brave warrior Jungal balahu was erected at Jungol Balahu Garh. The statue is now another attraction of Tourists .As this place has historical and cultural significance, so it may declared as Heritage and cultural sites by the Govt. for Development.

### **Bharat Ratna Gopinath Bordoloi Museum :**

The Bharat Ratna Gopinath Bordoloi Memorial Museum, Raha is a personalia Museum established in the Raha State Dispensary premises in memory of Bharat Ratna Gopinath Bordoloi in 1998 and inaugurated by then Governor Late S.K. Sinha on 6th June, 1998. There are three units of Assam Type houses in the premises. Of these two units are used as Museum for display of valuable personal belongings of Bharat Ratna Gopinath Bordoloi.

It was the birth place of Lokapriya Gopinath Bordoloi who was born in 6th June 1890, while his father Late Dr. Gopeswar Bordoloi was posted at Raha as State Dispensary Doctor. The Assam type houses were constructed in 1882. As per photographic evidence the original Assam type house had thatched roof. The wall of the house was made with battened jungle reed with mud plaster and lime painting. The house was renovated first in the year 1998 and now in 2017. The museum houses 51 personal objects and a part of it has been now brought to the Laboratory at the Assam State Museum for conservation works.

The Museum was re-opened after renovation to the general public on 6th June, 2017 by then Hon'ble Chief Minister of Assam, Sri Sarbananda Sonowal.



### **Basundhari Than:**

Basundhara Than is another important religious pilgrimage sites of Raha region. It is located at a distance 6 K.m from Raha Town. Although it falls outside Raha M.P.A, it religious significance. During the time of Bhim Ekadahki many pilgrimage, devotees, tourist came from different places of Assam for offering prayer to” Maa Basundahri”. Therefore, this religious site should be developed with better infrastructure facilities to be provided for the pilgrimages. There is also a beautiful water fall near the “Than” which attract tourist.



## **7.4 PROPOSED STRATEGIES :**

### **7.4.1 HERITAGE SITES MANAGEMENT AND ORGANIZATIONAL STRUCTURE :**

There is a need to setup a Heritage Committee for Raha Planning Area. The concerned Development authorities/municipalities as well as local stakeholders, NGO, s have significant role to play in successful implementation of strategies proposed for Raha Areas. Formulations of special regulations to control or mediate development within the available heritage areas are a prerequisite for



effective implementation of the proposed recommendations. Special regulations for all development within heritage areas, including new construction, demolition or modification to existing buildings around historic structures or within historic precincts must be formulated by the concerned authority with the advice of Heritage Committee. Detailed plans must be prepared by respective Municipalities. It is necessary to prepare an inventory of build, cultural and natural heritage resources of the special areas. The inventory must include both protected and unprotected resources. The cost for most of the new developments in special heritage areas is already covered in budget allocation for “Tourism, Recreation and Culture” and hence not included in this table. Estimates for projects those are specific for preservation of heritage resources are only included. River Front Development is treated as a separate item of budgetary allocation.

The relevant policy guidelines and management of culture and natural heritage can rejuvenate and revitalize the Raha region and support the existing cultural identity. It can also promote tourism, boost local economy and contribute a great sense of pride amongst the residents and become a touchstone for future development.

## **7.2 STRATEGIES FOR DEVELOPMENT OF RECREATIONAL AREAS:**

Recreation is any physical or psychological revitalization through the voluntary pursuit of leisure time. It is an activity which is relaxing to people and provide diversions from their normal routine. Generally there are four types of Recreational activities:

Revitalization: Restoration and enhancement of mental and physical health.

Play :- relaxation and exercise

Adventure :- Excitement and challenge

Education : organized and incidental

Indoor Facilities consist of library, clubs, cinema hall, auditorium, multiplex, art and craft centre, shopping mall, food courts, cyber, gymnasium etc.

Outdoor recreation facilities consist of gardens, parks, play ground, golf courses, zoo, and botanical garden, race course, stadium, exhibition ground, water sports complex, green ways etc.

### **7.3 PROPOSAL FOR AUGMENTATION AND DEVELOPMENT OF RECREATIONAL FACILITIES :**

- Development of green belts, plantation, parks, ghats, plazas, along the riverfront abreast the urban set up and invite nature harsh environment through myriad ways.
- Amusement parks to be developed along with horticulture, pisi culture, herbal arks, etc
- Development of eco-tourism with provision of water theme parks, lagoon resorts, weekend resorts, clubs, etc at Planning area level

### **7.4 PROPOSED STRATEGIES TO BOOST TOURISM :**

As a service industry, tourism has numerous tangibla and intangible elements. Major tangible elements include transportation, accommodation, and other components of a hospitality industry. Most intangible elements relate to the purpose or motivation for becoming a tourist, such as rest, relaxation, the opportunity to meet new people and experience other cultures, or simply to do something different or have an adventure.

Tourism is vital for every place, due to the income generated by the consumption of goods and services by tourist, the taxes levied on business in the tourism industry, and the opportunity for employment and economic advancement by working in the industry. For these reasons government and private agencies sometimes promote a specific region as tourist destination, and support the development of advancement by working in the industry. For these reasons government and some private agencies sometimes promote a specific region as tourist destination, and support the development of a tourism industry in that area. The contemporary phenomenon of mass tourism may result in overdevelopment; however alternative forms of tourism such as ecotourism seek to avoid such outcomes by pursuing tourism in a sustainable way.



Raha Region offer substantial potential for tourism development. According to the existing scenario analysis, it has been observed that the following categories of tourism have immense potential for this region.

Cultural and Historical Tourism with historically important structures mainly the Jungol Balahu Garh is situated at distance from 3 Km from Raha Town along the side of NH-37 which is major historical sites for the tiwa community and for other also. Basically these are highland area like embankments constructed by the Great Tiwa Warrior. There is also museum of Bharat Ratna Gopinath Bordoloi the first chief miniter of Assam with the heart of the town.

Basundhara Than is another important religious pilgrimage sites of Raha region. It is located at a distance 6 K.m from Raha Town. Although it falls outside Raha M.P.A, it religious significance. During the time of Bhim Ekadahki many pilgrimage, devotees, tourist came from different places of Assam for offering prayer to" Maa Basundahri". Therefore, this religious site should be developed with better infrastructure facilities to be provided for the pilgrimages. There is also a beautiful water fall near the "Than" which attract tourist.

## **7.5 CITY BEAUTIFICATION PLAN/PROPOSALS :**

### **7.5.1 ROADSIDE PLANTATION :**

Roadside plantation acts as a buffer between the people and government- owned forests, and it will help to reduce the extensive indiscriminate destruction of forests. Roadside tree planting can make significant improvements to the quality of roads and the environment and can protect key natural resources, especially in ASAL regions where vegetation is essential in binding the soil with organic matter that aids in enhanced infiltration and water retention in the soil.

Planting trees along the road sides, highways and pathway is known as avenue plantation. Avenue plantation is generally practiced for the aesthetic value, Beautification, shade purpose, control of soil erosion and for its economic use of timber, flowers & fruits. Best trees for roadside plantation are Neem, Krishna Chura, Radha Chura, Sonaru. Etc. Trees also give us fresh air as they produce oxygen. Trees are planted along the roadside as they provide shade to the travelers during summers.

Below table shows the Proposal of Roadside tree Plantation alongside the major Road of Raha Town Area.

**Table-33:**

SL. No	Name of the Road	Length
1	Raha Natun Chariali to Purana Chariali	0.5 Km (Both side)
2	Garmari Tini-Ali to Khaigarh Tini-Ali	2 Km ( Both side)
3	Jungol Balahu Statue to Raha Toll Gate	7 Km ( Flowing Plants on Divider)
4	Raha Natun Chariali to Hatibandha Dalong.	3 Km ( Both side)
5	Garmari Tini-Ati via BB Hanchariya school Tini-Ali to Chaparmukh police station	3 Km (Both side)

### 7.5.2 REQUIREMENTS AND STRATEGIES :

1. One Kind of Flowering Trees on Both Sides
2. Two Kinds of Flowering Trees Blooming at one Time on both Sides of Road
3. Two Kinds of Flowering Trees Blooming at Different Time on both Sides of the Roads
4. Shady Trees Only on both Sides of Roads.
5. The trees should be planted at least 12 m apart from the centre of the carriageway.

If the road is constructed on the embankment, the trees should be planted as possible as high on the sides of the embankment.

### 7.6 URBAN AGRICULTURE AND URBAN FORESTRY :

Urban agriculture, urban farming, or urban gardening is the practice of cultivating, processing, and distributing food in or around urban areas. Urban agriculture is also the term used for animal husbandry, aquaculture, urban beekeeping, and horticulture. These activities occur in peri-urban areas as well. Peri-urban agriculture may have different characteristics.



Urban agriculture can reflect varying levels of economic and social development. It may be a social movement for sustainable communities, where organic growers, "foodies", and "locavores" form social networks founded on a shared ethos of nature and community holism. These networks can evolve when receiving formal institutional support, becoming integrated into local town planning as a "transition town" movement for sustainable urban development. For others, food security, nutrition, and income generation are key motivations for the practice. In both scenarios, more direct access to fresh vegetables, fruits, and meat products through urban agriculture can improve food security and food safety.

#### **7.6.1 TYPES OF URBAN FARMING :**

- Backyard Gardens. This is the growing of food on home property. ...
- Tactical Gardens. This involves using the limited space available to practice agriculture without having to incur hefty expenses.
- Street landscaping.
- Forest gardening.
- Greenhouses.
- Rooftop gardens.
- Green walls
- Vertical farms.

#### **Strategies :**

Allotment gardens: An allotment garden is a plot or parcel of urban or suburban land made available for individual, non-commercial gardening or food growing and recreation.

Community gardens: Community gardens are an emerging form of urban farming.

Inventory of your town land (and rooftops)

Partnerships and Cultivate market access

Urban forestry is the care and management of single trees and tree populations in urban settings for the purpose of improving the urban environment. Urban forestry involves both planning and management, including the programming of care and maintenance operations of the urban forest. Urban

forestry advocates the role of trees as a critical part of the urban infrastructure. Urban foresters plant and maintain trees, support appropriate tree and forest preservation, conduct research and promote the many benefits trees provide. Urban forestry is practiced by municipal and commercial arborists, municipal and utility foresters, environmental policymakers, city planners, consultants, educators, researchers and community activists. The urban forestry comprises all green elements under urban influence such as, Street trees and road plantations, Public green areas, such as parks, gardens, cemeteries, Semi-private space, such as green space in residential areas and in industrial or specially designated parks.

**Strategies :**

Increase tree planting in neighbor hoods with low urban forest cover.

Increase Street and park tree diversity.

Plant trees to support green infrastructure and reduce climate change

Enhance biodiversity through tree planting.

Update inventory and data management for public trees.

Manage public trees for public safety and support tree health.

Work together with local people and the urban NGO related to forestry.

Raise awareness of the importance of the urban forest.

Support volunteers, NGOs, schools, and neighborhood groups in urban forest stewardship.

**7.7 PUBLIC RAIN WATER HARVESTING SCHEME :**

Rainwater harvesting (RWH) is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation, so that it seeps down and restores the ground water.

Harvesting rainwater allows the collection of large amounts of water and mitigates the effects of drought. Most rooftops provide the necessary platform for collecting water. Rainwater is mostly free from harmful chemicals, which



makes it suitable for irrigation purposes. There are two ways of harvesting rainwater, namely; surface runoff harvesting and rooftop rainwater harvesting.

There are two major techniques of rainwater harvesting.

**Surface runoff harvesting:-** In this method, rainwater flows away as surface runoff and can be stored for future use. Surface water can be stored by diverting the flow of small creeks and streams into reservoirs on the surface or underground. It can provide water for farming, for cattle and also for general domestic use. Surface runoff harvesting is most suitable in urban areas. Rooftop rainwater/storm runoff can be harvested in urban areas through:

- Recharge Pit
- Recharge Trench
- Tube well
- Recharge Well

**Groundwater recharge**

Groundwater recharge is a hydrologic process where water moves downward from surface water to groundwater. Recharge is the primary method through which water enters an aquifer. The aquifer also serves as a distribution system. The surplus rainwater can then be used to recharge groundwater aquifer through artificial recharge techniques.

Rainwater in rural areas can be harvested through :

- Gully Plug
- Contour Bund
- Dugwell Recharge
- Percolation Tank
- Check Dam/Cement Plug/Nala Bund
- Recharge Shaft

Although rainwater harvesting measure is deemed to be a desirable concept since the last few years, it is rarely being implemented in rural India. Different regions of the country practiced a variety of rainwater harvesting and artificial recharge methods. Some ancient rainwater harvesting methods which includes Madakas, Ahar Pynes, Surangas, Taankas, etc.

## **7.7 WATER HARVESTING SCHEMES IN INDIA :**

Steps taken by the Central Government to control water depletion and promote rain water harvesting / conservation are as under:

1. Government of India launched Jal Shakti Abhiyan (JSA) in 2019, a time bound campaign with a mission mode approach intended to improve water availability including ground water conditions in the water stressed blocks in India. Ministry of Jal Shakti visited water stressed districts and to work in close collaboration with district level officials to undertake suitable interventions. In addition, 'Jal Shakti Abhiyan – Catch the Rain' campaign has been launched by Hon'ble Prime Minister of India on 22 March 2021.
2. National Water Policy (2012) has been formulated by Department of Water Resources, RD & GR, inter-alia advocates rainwater harvesting and conservation of water and highlights the need for augmenting the availability of water through direct use of rainfall. It also inter-alia, advocates conservation of river, river bodies and infrastructure should be undertaken in a scientifically planned manner through community participation. Further, encroachment and diversion of water bodies and drainage channels must not be allowed and wherever, it has taken place, it should be restored to the extent feasible and maintained properly.
3. In compliance to the decision taken by the Committee of Secretaries, an 'Inter Ministerial Committee' under the Chairmanship of Secretary (WR, RD & GR) has been constituted to take forward the subject of 'Push on Water Conservation Related Activities for Optimum Utilization of Monsoon Rainfall'.
4. Ministry has circulated a Model Bill to all the States/UTs to enable them to enact suitable ground water legislation for regulation of its development, which also includes provision of rain water harvesting.
5. Master Plan for Artificial Recharge to Groundwater- 2020 has been prepared by CGWB in consultation with States/UTs which is a macro level plan indicating various structures for the different terrain conditions of the country including estimated cost. The Master Plan envisages construction of about 1.42 crore Rain water harvesting and artificial recharge structures in the Country to harness 185 Billion Cubic Metre (BCM) of monsoon rainfall.



6. CGWB has taken up Aquifer Mapping and Management Programme during XII Plan, under the scheme of Ground Water Management and Regulation. The Aquifer Mapping is aimed to delineate aquifer disposition and their characterization for preparation of aquifer/ area specific ground water management plans with community participation. The management plans are shared with the respective State governments for taking appropriate measures / implementation.

7. Best practices of water conservation by various entities including private persons, NGOs, PSUs etc have been compiled and put on the web site of the Ministry for the benefit of general public. An interactive link on best practices has also been created for receiving inputs from public, which, after necessary evaluation/validation are put on the website for the benefit of the public.

8. Department of Water Resources, RD& GR has instituted National Water awards to incentivize good practices in water conservation and ground water recharge.

9. Mass awareness programmes (Trainings, Seminars, Workshops, Exhibitions, Trade Fares and Painting Competitions etc.) are conducted from time to time each year under the information, Education & Communication (IEC) Scheme of DoWR, RD & GR in various parts of the Country to promote rain water harvesting and artificial recharge to ground water.

10. The Ministry of Rural Development in consultation and agreement with the Department of Water Resources, RD & GR and the Ministry of Agriculture & Farmers' Welfare has developed an actionable framework for Natural Resources Management (NRM), titled 'Mission Water Conservation' to ensure gainful utilization of funds. The Framework strives to ensure synergies in Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), erstwhile integrated Watershed Management Programme (IWMP) now PMKSY Watershed Development Component and Command Area Development & Water Management (CADWM), given their common objectives. Types of common works undertaken under these programmes/ schemes are water conservation and management, water harvesting, soil and moisture conservation, groundwater recharge, flood protection, land development, Command Area Development & Watershed Management.



11. Central Government supports construction of water harvesting and conservation works primarily through Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and Pradhan Mantri Krishi Sinchayee Yojana – Watershed Development Component (PMKSY-WDC).

12. Atal Bhujal Yojana (ABHY), a Rs.6000 crore scheme with World Bank funding, for sustainable management of ground water with community participation is being taken up in the identified over-exploited and water stressed areas fall in the States of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. This scheme is expected to contribute significantly towards water and food security of the participating states.

### **STRATEGIES AT LOCAL LEVEL :**

At local level, Urban Local Body/Municipal Board in compliance with Rain water Harvesting should strictly follow the Government Guidelines, Circulars, Manual, model circulated time to time. In different Structural construction, Planning, Drawing, there should be the provision of Rain water harvesting system. In this regards, authority related to the permission of construction of Houses, Building, Structure should follow the rules, Byelaws of Building rules. Regarding rain water harvesting in the Raha Planning Area, Raha Municipal Board should strictly follow the Building Rules-2014 Govt. of Assam in issuing Building construction permission and also to create Public awareness among people of the locality in rain water harvesting techniques.

Development of parks and recreational spaces with Identifiaction and demarcation of Open Space for sports, Cultural function, fairs etc in Raha Planning Area:

Due to rapid growth of population, the present recreational facilities are not sufficient to fulfill the needs of the people of the Raha Town. In Raha Town there is only one organized Parks that is Raha Children Parks for the Children is to developed with all Modern facilities



Proposal for Construction of Playground Infrastructure and Parks & other recreational Facilities in Raha Planning Area:

**Table-34 :**

SL. No	Name of the Open space/ site	Proposal
1	Raha Sport Association Playground.	Development of Playground infrastructure with Spectators Gallery, Pavilion, Indoor Stadium, and Gymnasium with modern amenities.
2.	Khaigarh Play Ground	Development of a Mini stadium with spectators galleries and modern facilities
3	Mahendra Nath Hazarika Srmiti Bhawan	Construction of Public Auditorium with all modern facilities.
4	Pandit Gopinath Bordoloi Palyground	Construction of Open theater with all modern facilities
5	Suitable Plot of land	Proposal of construction of 4 Nos. of Modern Marks within the Raha Municipal Board.
6.	Suitable Plot of land within the each Revenue Village.	Proposal for construction of 1 Children Parks and 1 Community centre at each Revenue village of the raha Planning Area.

The sports and youth welfare activities are one of the major sectors of Human Resource Development Programme. In Raha Planning area there is only one Playground that is under Raha Sports Association which is to be developed to a full-fledged stadium with all Modern facilities.

The other playgrounds are also should be upgraded providing with all modern facilities. Besides, there should be Modern Parks, Community centre in each Revenue Village of the Raha Master Plan Area considering the growth of population in Raha town and the planning area, new parks and play grounds like Cricket stadium, Gymnasium Hall, Hockey field are to be created in future.

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## *Chapter 8*

### **LAND USE PLAN**

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#### **8.1 EXISTING LAND USE OF RAHA MASTER PLAN AREA -2021 :**

Land use gives an accurate picture of an urban area which is having great significance for future planning. The main purpose of land use classification is to provide framework for the development of a particular area. The need for studying the land use aspect is elaborated as follows: To know the arrangement of various parts of town put to different uses such as residential, commercial, industrial etc.

The study of land use holds a very significant place where a particular settlement can be recognized as a town depends on its functional structure. The functional activity can be regarded as the main regions for the growth of urban centre. The main purpose of land use study is to provide framework for the development of a particular area. It gives us an idea about the proportion of various types of land.

The Existing Land Use pattern of Raha Master Plan Area was updated based on ground reality on the scientific base map prepared with the help of Satellite Image and Revenue records like village level cadastral sheets, Field Measurement Book sheets and Town Survey Sheets. The Raha Planning Area is administratively divided into two entities, Urban and Rural. Urban area comprises of Raha Municipal Board area of **5.18 Sq.Km** and Rural area of **36. 02 Sq.Km** including 14 Nos. of villages. This chapter presents the existing land use analysis, 2021 for the planning area.

As a part of the preparation of GIS Based Master Plan- 2045, the study of the existing Land use pattern of Raha Master plan area was carried out by a survey conducted by T&CP, District Office, Nagaon in order to formulate future policies so that a balanced approach can be made in allocating the future land uses. The existing landuse in Raha Master plan area has been grouped into the following 10 (Ten) categories.

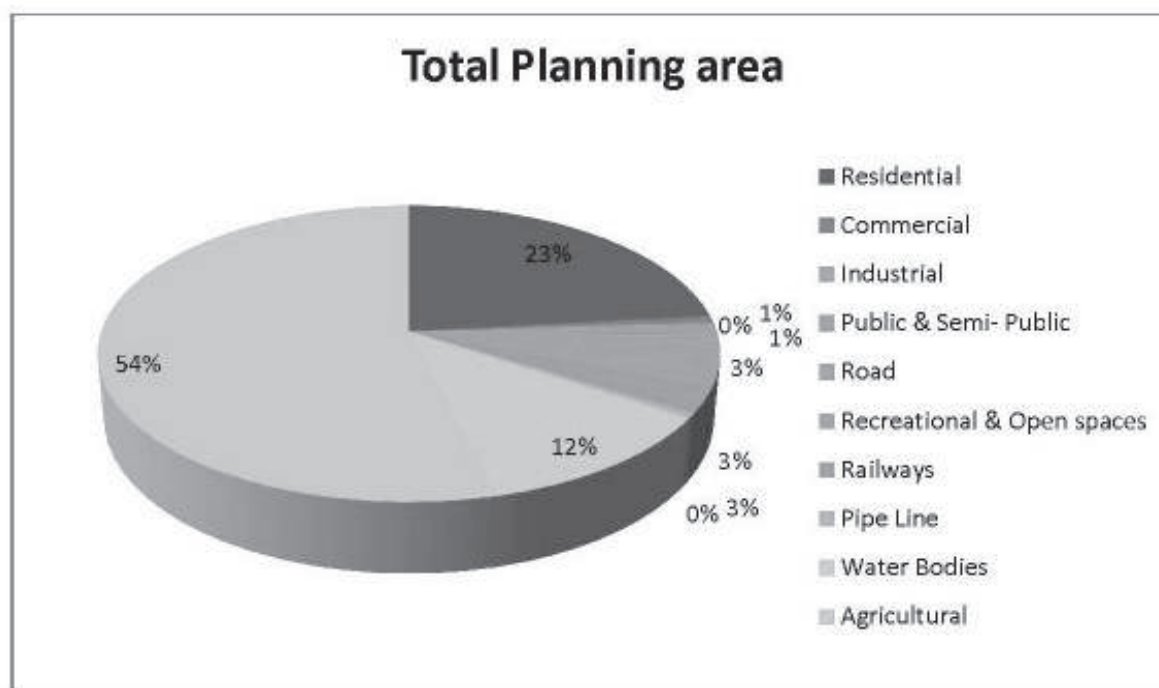


**Table -35 : Existing Land use of Raha Master Plan Area**

SL NO.	LAND-USE CATEGORY	AREA (IN SQ. KM)	% OF DEVELOPED AREA	% OF TOTAL PLANNING AREA
1	RESIDENTIAL	8.97	68.00	21.78
2	COMMERCIAL	0.29	2.29	0.71
3	INDUSTRIAL	0.10	0.75	0.24
4	PUBLIC & SEMI-PUBLIC	0.40	3.03	0.98
5	ROAD	1.09	8.27	2.66
6	RECREATIONAL & OPEN SPACES	1.12	8.49	2.72
7	RAILWAYS	1.02	7.73	2.48
8	PIPE LINE	0.19	1.44	0.46
	<b>TOTAL DEVELOPED AREA</b>	<b>13.19</b>	<b>100.00</b>	
9	WATER BODIES	4.56	25.85	11.06
10	AGRICULTURAL	23.45	74.15	56.91
	<b>TOTAL UNDEVELOPED AREA</b>	<b>28.01</b>	-	-
	<b>TOTAL AREA</b>	<b>41.20</b>	-	<b>100.00</b>

The detailed land use analysis of the Raha Master Plan Area-2021, gives the picture of the shape of the Urban and Rural land for various activities. From the above table it is seen that out of the total developed land, Residential use occupied 8.97 sq.km (68.00%) ,0.29% occupied commercial use, 0.10 % occupied by industrial use, 0.40 Sq. Km occupied for public and semi public use which includes various Physical and social infrastructure like Educational institutes, Government Offices, Hospitals, Govt. Residential Buildings etc., 1.09 % of land occupied by roads, 1.12 % of land occupied by recreation facilities, 1.02 % of land already occupied by railways .

Out of the undeveloped land, Agriculture land use being the predominant land use which occupies 23.45 Sq. Km.( 56.91%) of the total planning area, about 4.56 Sq km (11.06%) occupies by water bodies covered by Kalong and Kapili river, some ponds and wetlands (Beels and Dubees) etc.



From the table it is also observed that there is a huge scope of future development of the planning area .The rural area has concentration of good amount of Agricultural land , open space and water bodies and urban area also has large amount of vacant land and open spaces.

Thus the Planning area has a good scope of development of existing residential buildings and construction of new residential buildings or redevelopment in conformity with the heritage importance and special regulations for the Planning Period up to 2045.

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**Chapter : 9****PROPOSED LAND USE PLAN**

By using the planning policies, techniques, principles and projections, follow up of the URDPFI Guidelines, various recommendations and proposals for the future growth of Raha Master Plan Area have been formulated. As such recommendation and proposals have been translated into land use plan to give them spatial dimension. The land use shown in the map indicates the functional relationship between various urban activities visualized up to 2045 and aims at to provide the most economics use of urban land.

The land requirement for various urban and rural activities have also been proposed on the basis of projected population of 52849 by 2045. The distribution of land into various broad categories of land use have been made keeping in view the minimum desirable standards of development and functional linkages between them. The following table shows the land proposed for various major uses.

**Table-36 :** Proposed Land Use classifications for different uses of Raha Master Plan, 2045

Sl. No	Land use Category	Existing Area (in Sq. Km.)	Area (in Sq. Km.)	% of Total Planning Area
1	Residential	8.97	17.06	41.41
2	Commercial	0.29	1.40	3.40
3	Industrial	0.10	0.36	0.87
4	Public & Semi-Public	0.40	0.47	0.91
5	Road	1.09	1.12	1.14

6	Recreational & Open Spaces	1.12	1.08	1.17
7	Railways	1.02	1.02	2.62
8	Pipe Line	0.19	0.19	0.46
9	Bus/ Truck Terminus	-	0.05	0.12
	<b>Total developed area</b>	<b>13.19</b>	<b>22.75</b>	<b>55.22</b>
10	Agricultural	23.45	13.31	32.30
11	Water Bodies	4.56	4.56	11.07
12	Green belt	-	0.18	0.44
13	Eco-Zone	-	0.40	0.97
	<b>Total area</b>		<b>41.20</b>	<b>100.00</b>

## 9.1 PROPOSED RESIDENTIAL USE :

To accommodate the projected population of 52849, an area of about 8.09 Sq.km are proposed for residential use in Raha Master Plan Area. The plan provides the following pattern of residential density.

**9.1.1 High Density Zone:** Raha Municipal area has been proposed as high density residential zone with a population of 75 to 100 persons per acre.

**9.1.2 Medium Density Zone:** Within the residential areas of the villages just adjacent to the Municipal boundary have been proposed as Medium Density residential zone with a population of 50 to 75 persons per acre.

**9.1.3 Low Density Zone:** The residential areas of the other villages have been proposed as low density residential zone with a population of 20 to 50 persons per acre.

## 9.2 PROPOSED COMMERCIAL LAND USE:

Due to rapid population growth in Raha, the existing commercial area concentrated along the NH-37 towards East and West, along the PWD road of Raha-Barapujia and surrounding the town area will not be sufficient to meet the need of future projected population.



Therefore, an additional area of about 1.11 Sq. Km is proposed for commercial purposes in the Raha Master Plan area.

### **9.3 PROPOSED INDUSTRIAL LAND USE:**

There are good prospects for setting up of forest and agricultural based small and medium industries in Raha Master Plan area. There are also good scopes for setting up of service and light consumer goods producing industries like agriculture implements, readymade garments, soap making, brick making, bakery, plastic goods, power loom etc. In addition to the existing industrial area, an area of about 0.26 Sq.Km of land has been earmarked for setting up of medium and light industries in the Raha Master Plan Area specially Chaparmukh , Dighali ati and towards Barapujia road.

### **9.4 PROPOSED PUBLIC AND SEMI-PUBLIC USE:**

Within Raha Master Plan area land proposed for public and semi-public use is 0.07 Sq.km of the total developed area. The public and semipublic uses have been proposed on Govt. land available in the Planning Area.

### **9.5 PROPOSED CIRCULATION PLAN:**

The land use proposed under transportation will be 0.08 Sq.km. for Raha Master Plan -2045. The proposals for improvement and widening of roads within Raha Master Plan area of different places are mentioned in the Table No 38.

All the major junction points should be developed in a planned manner. Modern traffic signaling system is to be proposed within the Raha Master Plan Area.

### **9.6 Hierarchy of Road proposed with width:**

- |    |                |   |           |
|----|----------------|---|-----------|
| 1) | Primary road   | - | 75" width |
| 2) | Secondary road | - | 50" width |
| 3) | Tertiary road  | - | 20" width |

## 9.7 PROPOSED PARKS AND PLAYGROUND :

A quite no. of parks and playgrounds are not available within the Raha Master Plan area to meet the demand of the people and the condition of the existing parks and playgrounds are deplorable condition which are urgently need to be improved. Thus an area of 0.15 sq.km. including the existing one has been proposed for park and playground for Raha Master Plan 2045.

## 9.8 PROPOSED GREEN BELT:

An area of 0.18 sq.km. has been proposed for Green Belt within Raha Master Plan Area. The green belt will act as buffer zone between residential use and other uses with the Master Plan.

### 9.8(A) LAND PROPOSED FOR ECO- ZONE :

The land is proposed for Eco- Zone is **0.40 sq.km.** of the total Area of Raha Master Plan.

## 9.9 INFRASTRUCTURE PROPOSALS :

The existing social and physical infrastructure facilities and their services of Raha Master Plan area have been studied and the deficits and future requirements are calculated as per URDPFI Guidelines as below:-

### 9.9.1 Education :

The existing educational facilities and future requirement for Raha Master Plan area up to the year 2045 have been estimated considering a higher standard as mentioned in the table-37 below:-

Sl. No	Type of Educational Institute	Norms	Existing Numbers	Deficit	Total area required(in hectare)
1	Primary school	1 in 2500 population	27	--	--
2	Middle school	1 in 5000 population	7	4	4
3	High school	1 in 7500 population	7	1	1



4	Higher Secondary school	1 in 90,000 population	2	--	--
5	General college	1 in 1,25,000 population	1	--	--
<b>Health</b>					
6	Intermediate Hospital	1 in 1,00,000 population	1 No	--	--
7	Nursing Home , Maternity home	1 in 45,000 population	Nil	1	1
8	Dispensary	1 in 15,000 population	1	3	3
<b>Socio-Cultural Facilities:</b>					
9	Community Room	1 in 5000 population	1	2	2
10	Community Hall/ Library	1 in 15,000 population	1	2	2
11	Music Dance & Drama etc.	1 in 1,00,000 population	Nil	1	1
12	Religious	1 in 5000 population	4	4	4
<b>Communication</b>					
13	Post Office	1 for 15,000 population	2	2	2
14	Police Station	1 for 90,000 population	1	--	--
15	Fire Station	1 for 2,00,000 population	1	--	--

#### 10.10 SECTOR -WISE INVESTMENT PROPOSAL:

The sector wise requirement of implementation of various projects of Raha Master Plan Area is detailed as table-38 below:

SL. NO.	Location	Project Name
<b>Neighborhood Centre</b>		
1.	Garmari	Neighbourhood Centre(10.01 Hac)
2.	Tupakuchi	Neighbourhood Centre (10.12 Hac)
3.	Dighali Ati	Neighbourhood Centre (10.05 Hac)
4.	Saragaon	Neighbourhood Centre (10.11 Hac)
5.	Khaigarh	Neighbourhood Centre (10.15 Hac)

<b>Solid Waste management</b>		
6.	Raha Planning Area	Improvement and Modernization of Solid Waste Collection, Transportation and Disposal System of Raha
7.	Chapar mukh Gaon Area/ Baruabali	Development of Solid Waste Engineering Landfill Site on 7 (seven ) Bigha of Land
<b>Drainage System</b>		
8.	Raha Planning Area	Preparation of DPR for Drainage System for Kampur Area
9.	Raha Town	Construction and Improvement of Existing Storm Water Drains
10.	RahaTown	Cleaning and Maintenance of existing Drains
<b>Water Bodies</b>		
11.	Raha Planning Area	Repair and Renovation of Water Bodies in Planning Area like Ranthali Beel, Nimajan Dubi, Hatibandha Dubi
12.	Raha Planning Area	Development of Green Belt around all water Bodies
13	Raha Planning Area	Development of Kolong River front as recreational zone
<b>Traffic and Transportation</b>		
14.	Raha Planning Area/ Saragaon/ Dighali ati	Construction of Bus Terminus
15.	Raha Planning Area/ Dighali ati/ Saragaon	Construction of Truck Terminus
16.	Raha Town Area	Construction of Cycle Parking
17.	Raha Town Area	Construction of street Parking
18.	Raha Town Area	Construction of Traffic Signals Point
<b>Fly over</b>		
19.	Raha Natun Chariali	Construction of Fly over
20.	Chaparmukh Railway Jn.	Construction of Fly over
<b>Recreational Facility</b>		
21.	Raha Planning Area	Improvement of Parks and Playgrounds



22.	Jungal Bolohu Area	Construction of Parks
23.	Raha Ranthali Area	Development of town level Ranthali beel Wetland Park
24.	Tupakuchi Area	Construction of Parks
25.	Chaparmukh Town Area	Construction of Parks and playground
26.	Raha Town Area	Construction of Parks
27.	Dighali Ati Area	Construction of Parks and Playground
28.	Saragaon	Construction of Parks and playground
<b>Industrial Area</b>		
29.	Towards Raha – Barapujia Road	Development of industrial Area
30.	Chaparmukh Area	Development of Industrial estate
31.	Garmari Area	Development of Industrial estate

<b>Improvement and widening of Road</b>		
32.	Raha college approach road	700 metre
33.	Chaparmukh Sing gaon Road	600 m
34.	Raha kampur road to Chakial gaon	500 m
35.	Dighali ati Chaparmukh Road Via Krishna Nagar	2.00 Km
36.	Khaigarh Dighaldari Road	1.50 Km.
37.	Raha to Raha Chaki	500 m
38.	Raha Purana Chariali to Raha Gaon	700 m
39.	NH-37 to Ranthali	3.00 Km.
40.	Khaigarh to Kargil Chak	800 m
41.	Raha Tapakuchi to Balipara	1.50 Km
42.	R.B Road at Batalian Chariali to NH-37 via Pub Tapakuchi	2.00Km
43.	NH-37 to Rajagaon Road Via Chegungagan, W/No.2	250 m
44.	Raha M.B Area Bylane No.1W /No.3	350 m
45.	Extension of Raha Hospital approach road	200 m
46.	Debaguri Road	500 m
<b>Construction of Drain within Raha Master Plan Area</b>		
47.	Construction of drain both side of the Dighali ati Chaparmukh Road Via Krishna Nagar	4.00 Km

48.	Construction of Drain both side of Raha M.B Area By lane No.1W /No.3	700 m
49.	Construction of Drain both side from NH-37 to Rajagaon Road Via Chegun bagan, W/No.2	500 m
50.	Construction of Drain within Raha Municipal Area	22.00 Km
51.	Khaigarh Dighaldari Road	1.50 Km.

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## ***Chapter : 10***

### **DISASTER PLAN**

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Disaster is an undesired calamities event that seriously disrupts the functioning of a community or society and causes human, material and economic or environment losses that exceed the community's or society's ability to cope using its own resources. Disasters are usually caused by nature but in some cases, it can be caused by human actions as well. Disaster can be broadly classified into water and climate related geology related and accidental related. Assam has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Flood, drought, cyclones, earth quakes and landslides have been recurrent phenomena.

At national level, the ministry of Home affairs is the nodal Ministry for all matters concerning disaster management and at state level State Disaster Response force under Ministry of Home, Govt. of Assam is the responsible agency to tackle any disasters within the State.

Raha in Nagaon district comes under Brahmaputra valley and one of the town located on the bank of kolong River, is an anabranh of the River Brahmaputra and flows North-Westerly direction of the Southern side of the Town. River Kopili also flows in the same direction as the River Kolong from few kilometers away from Raha Town. Nagaon district has got very high reserves of Glass sand. Thus, it can be unanimously vouchsafed that the geology of Assam depicts a rich repository of minerals with its diversified geographical structure.

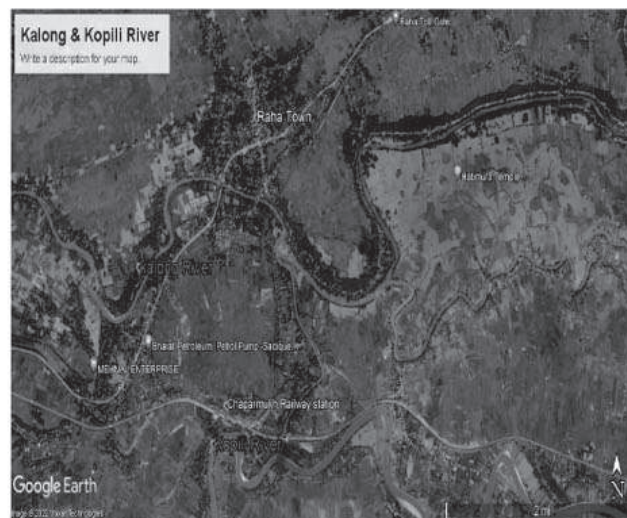
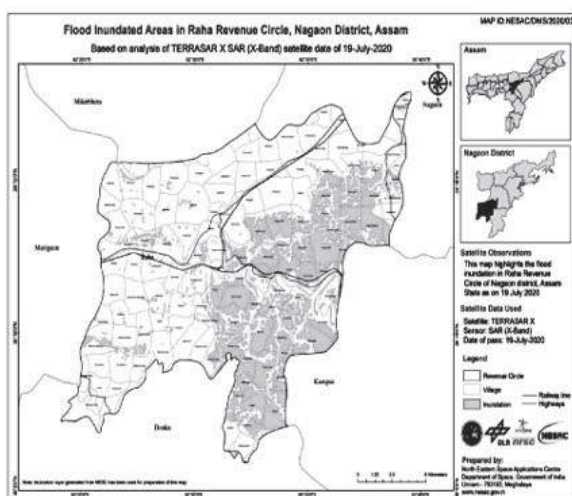
#### **10.1 FLOOD :**

River Kollong is a spill channel of river Brahmaputra having its intake point near Jakhalabandha in between Kukurakata hill and Hatimura hill. The river traverses about 199.67 Km through Nagaon and Morigaon district and finally outfalls into the river Brahmaputra near Chandrapur in Kamrup district. The river meets streams like Diyu, Missa and rivers like Killing, Kopili and Digaru along its course.

The hydrology and topography of the catchment area of the river Kolong was such that apart from receiving water from the hilly streams, the river carried



the flood water from the over flooded Brahmaputra river inundating the low-lying areas of Nagaon and Morigaon district and creating havoc among the people. Even the Nagaon town was under threat due to such flooding by Kolong River. The whole course of the river basin is basically divided into two natural divisions as Upper Kolong sub basin and lower kolong sub basin. The Upper Kolong sub basin starts from the point of the origin of the River and extended upto Nagaon Town, covering an approximate length of 50 Km. The lower basin starts from the Nagaon Town through Raha town and spreads up to Hilokhunda area of Morigaon District, covering an area of more than 110 Km. During its course, kolong is fed with several rivulets namely Diju, Misha, Haria, Nonoi, Titamari, and Raha suti. Receiving the water from the aforesaid rivulets, the river kolong become bigger and enters the Morigaon district passing through NH-37 at Bhatigaon and Mulankata-Manipurtup area of Raha Revenue circle.



As Raha, is located on the downstream of River Kolong and Kopili River, the region experiences flood during the time of Monsoon. Excluding town area of Raha, the surrounding agricultural fields, Pathar area of the Revenue Villages namely Dighali Ati, Chaparmukh Town, Balipara, Hariamukh, Chaparmukhgaon, Balipara area experiences more or less flood and these all are



low-lying areas. However, the flood water does not recede into the village area. The intensity of flood in Raha town has been reduced since the construction of Dyke on the Right Bank of Kolong from Pulaguri to Molankata (8.6 Km) & construction of embankment along the Right Bank of Nonoi & Haria from Tulsimukh to Hariaghat (9.5 Km) the intensity of flood has been reduced.

**Table-38:-** Construction of embankments in Nagaon District including Raha circle as flood safety measures.

Dyke	Area	Length	Benefiting Area
Hatimura	Kaliabor	3.595 Km	1329 H
Brahmaputra Dyke		88.845 Km	48,000 H
Bihdubi		300 mt (dist. from dyke)	2 km
Sullung Borghuli		200 mt. (dist. from dyke)	8 Km
Bogamukh		500 mt ( dist. from dyke)	2 Km
Kopili L/B Dyke from charaihagi to Tuklaitup		27.4 Km	--
Kollong dyke R/B from phulaguri to Molankata	Under Raha Revenue Circle	8.6 Km	---
Extension along R/B of Kollong from phulaguri to hoiborgaon	Some ares fall under Raha Revnue circle	16.2 Km	---
Embankment along R/B of Nonoi & haria from Tulsimukh to Hariaghat	Some under Raha Revenue Circle	9.5 km	---
F/E along L/B of Nonoi from Bamuni to doboka PWD Road		8.5 km	
NTP Dyke on both side bank of kollong River		6.2	

Source :- DDMA, Nagaon



Raha Flood

River Kopili is also another River responsible of creation of sudden dam induced flood. Kopili is an interstate river in Northeast India that flows through the states of Meghalaya and Assam and is the largest south bank tributary of the Brahmaputra in Assam. The river Kopili rises in the North Cachar Hills District in Borail Range at an altitude of 1525 meter. Then it passes through Kopili Ghat, Penumbra, Kheroni, Rajagoan, Kampur, Raha, Amsoi, Kumoi, and Mayang.

The Kopili Hydro Electric Project, located across the districts of Dima Hasao in Assam and Jaintia Hills in Meghalaya and run by the North Eastern Electric Power Corporation, consists of the Khandong and Umrongso dams and their reservoirs and three power houses that have a total installed capacity of 275 MW.

The kopili dam has changed the character of flood in the river downstream for the worse. Before the construction of kopili dam, floods occurred mainly during the monsoon season. Increase in water volume due to heavy rains used to be the reason of flood. These were normal flood which occurred not more than two or three times a year. But after the construction of Dam, number of sudden artificial flood has been increased. Hundreds of houses in the Raha area of Nagaon district got flooded on 2020, Tuesday, after water were released from a dam of Karbi Langpi hydropower project in Karbi Anglong.



**10.1.1 DROUGHT :**

As Raha region lies on the banks of the River & Kalong, there is no scarcity of water for irrigation purpose for agricultural fields. Both the two rivers are perennial and full of water during the whole year. However, in 2009 whole district Nagaon was affected by Drought.

**Table-39 :**

SL. No	Disastrous	Year of Occurrence	Area affected	Name of the localities
1.	Drought	2009	Nagaon District	All the circles of District

Sources:-Department of Disaster Management, Nagaon

**10.1.2 RIVER EROSION :**

River erosion is a season specific calamity observed in certain period mostly in fixed seasonal interval, in rainy season specifically from the months of April to July. The Brahmaputra has unleashed its destructive force again in Assam. Bank erosion prone area of the streams and Rivers of Assam are to be converted by different soil conservation measures prone area of the streams and rivers of Assam are to be covered by different soil conservation measures in order to check the continuous loss of Agricultural land Gully erosion is the main erosion problem, Which damages a considerable area of Agricultural land annually. Gullies are the formation are the formation in the soil by the surface runoff water initiating sheet, rill and finally the gullies resulting in accountable loss of the top fertile soil. Gully control structure like spillways, check dams etc are constructed to stop further advancement of the gully heads and fingers and to improve the moisture regime in the command areas which results in increase in production from agricultural land.

Bank erosion occurred in Kolong and Kopili River in the areas like Haria Mukh, Phulaguri, Molankata, Tulsimukh, Chaparmukhgaon, Chaparmukh Town during the time of monsoon and continuous downpour increase the volume of water in Kolong and Kopili River leads to constant erosion/corrosion on it.

**Table-40 :**

SL.No	Disastrous Event	Year of Occurrence	Area affected
1	River erosion, Bank erosion	Every continuous year	Hariamukh, Phulaguri, Molankata, Chaparmukh gaontown, Tulsimukh under Raha Revenue Circle.

Source :- Department of Disaster Management, Nagaon

## 10.2 SEASONAL HAZARD ANALYSIS :

**Table-41 :**

Hazard s	Janua ry	Fe b.	Mar ch	Apr il	Ma y	Jun e	Jul y	Augu st	Se pt	O ct	No v.	De c.
Cyclone	X	X	X	X	X	X	X	X	X	X	X	X
Flood					←	→						
Drought					←	→						
Earthqu ake	←											→
Fire		←	→									
Lighteni ng				←	→							
Epidemi c	←											→

Source:- Department of Disaster Management, Nagaon



**10.2.1 VULNERABILITY (RISK AND HAZARDS ANALYSIS) :****Table-42 :**

Types of Hazards	Potential	Vulnerability	Vulnerable areas
Cyclone	Nil	-	-
Flood	Loss of crops, Human lives and animals and properties damage	Communication facility, Agriculture & Horticulture, Private infrastructure Houses, Irrigation sources, Electrical installations, Drinking water sources, Educational institution, and livestock	Dighali Ati, Chaparmukh Town, Balipara, Hariamukh, Chaparmukhgaon, Balipara within R.M.P area under Raha Revenue Circle
Drought	Drought human life and pets	Loss of Human lives & pets	Entire Raha circle
Earthquake	Human lives & Structures both public & Pvt.	Loss of Human lives & structures both public & pvt.	Entire Raha Circle
Fire	Lives and property	Loss of Human lives & structures both public & pvt.	Entire Raha Circle
Epidemic	Human lives & Pets	Loss of Human lives and pets	Entire Raha Circle
Lightening	Human lives	Loss of Human lives	Entire Raha Circle

Source :- District Disaster Management Plan, 2020, DDMA, Nagaon

**10.2.2 Infrastructure vulnerability against Hazards :****Table-43 :**

Vulnerability	Flood		Accident		Fire	
	Population	Area	Population	Area	Population	Area
Road network	15, 00,000 appx.	Nagaon sadar, Raha, Kampur, Samaguri, Kaliabor Revenue Circle areas 2800 sq k.m	6,25,000 appx	Along NH 36 & 37, SH-17, SH-18 urban area approachin g roads.	---	---
Water Supply	15,00,000 appx.	Nagaon sadar, Raha, Kampur, Samaguri, Kaliabor Revenue Circle areas 2800 sq k.m	-----	-----	-----	---
Hospital	50,000 appx.	All Developm ent block areas	-----	-----	1500 appx.	Civil Hospital Nagaon
Food stocks & Supplies	15,00,000 appx.	Nagaon sadar, Raha, kampur, Dhing, Rupahi, samaguri, Kaliabor Revenue circle areas 2800 sq. km	-----	-----	15,00,000	Nagaon sadar, Raha, kampur, Dhing, Rupahi, samagur iKaliabo r Revenue circle areas 2800 sq. km



Communication (system)	15, 00,000 appx.	Nagaon sadar, Raha, kampur, Dhing, Rupahi, samaguri, Kaliabor Revenue circle areas 2800 sq. km	-----	-----	-----	-----
Embankments	15,00,000 appx	Nagaon sadar, Raha, kampur, Dhing, Rupahi, samaguri, Kaliabor Revenue circle areas 2800 sq. km	-----	-----	-----	-----
Bridges	15,00,000 appx	Nagaon sadar, Raha, kampur, Dhing, Rupahi, samaguri, Kaliabor Revenue circle areas 2800 sq. km				

Source :- District Disaster Management Plan, 2020, DDMA, Nagaon

### **10.3 MITIGATION PLAN :**

Any disaster management plan or emergency management plan consists of four phases, namely: Mitigation, Preparedness, Response and Recovery. The Mitigation component in an emergency management plan is aimed at reducing the risk, impact, effects of a disaster. Hence careful planning eliminate the phase is important to reduce or eliminate the long-term risk to human life, property from natural and manmade calamities. It's important to have mitigation plans led by local community, working together to identify, plan for in the event of a disaster and reduce vulnerabilities and promote long term personal and community resilience and sustainability. Mitigation Plans can concentrate on both pre-disaster and post disaster efforts to reduce the impact of the disaster.

Pres-disaster Mitigation should focus on projects and interventions to address natural and man-made disaster to reduce risk to the population and property. This is mainly achieved by strengthening the resilience of National/state infrastructure. Post- disaster Mitigation efforts are primarily designed to reduce future damage in an affected area and decrease the loss of life and property and life due to the incidents following the disaster. The essential steps of hazard mitigation are:-

1. Hazards identification
2. Vulnerability Analysis
3. Defining a Hazard Mitigation Strategy.

#### **Implementation of Hazard Mitigation Activities and projects**

Raha region is also a affected by flood than any other natural disasters hence the disaster vulnerable area mitigation plan focuses on flood related eventualities and how can it be mitigated and have better preparedness. It is important to note that disaster management is an integrated task involving various government departments of region and the plan should focus on prevention, preparedness, mitigation, response, and measures.



**Embankments and venerable reaches of the Nagaon district****Table-44 :**

<b>Dyke</b>	<b>Area</b>	<b>Length</b>	<b>Benefiting Area</b>
Hatimura	Kaliabor	3.595 Km	1329 H
Brahmaputra Dyke		88.845 Km	48,000 H
Bihdubi		300 mt (dist. from dyke)	2 km
Sullung Borghuli		200 mt. (dist. from dyke)	8 Km
Bogamukh		500 mt ( dist. from dyke)	2 Km
Kopili L/B Dyke from charaihagi to Tuklaitup		27.4 Km	--
Kollong dyke R/B from phulaguri to Molankata	Under Raha Revenue Circle	8.6 Km	---
Extension along R/B of Kollong from phulaguri to hoiborgaon	Some areas fall under Raha Revenue Circle	16.2 Km	---
Embankment along R/B of Nonoi & haria from Tulsimukh to Hariaghat	Some areas fall under Raha Revenue Circle.	9.5 km	---
F/E along L/B of Nonoi from Bamuni to doboka PWD Road		8.5 km	
NTP Dyke on both side bank of kollong River		6.2	

**10.4 PREVENTION :**

As part of the said natural disasters the following measures can be adopted by concerned govt. departments to avoid and minimize the impacts of natural disasters.

- = The public work department should monitor the major water bodies like river, streams lakes for constant flow of water, rising level and identify

potential areas along the water bodies which need additional embankment or revetments, and these works should be implemented on priority before the onset of the season.

- = Power and communication should carry out through inspection of power lines, communication lines for defects and rectify them. Trees and branches which may damage power and communication lines should be trimmed or removed.
- = Health department should ensure the primary and community health centers are equipped with medicines and medical staff. Preventive vaccines for epidemics should be stocked in adequate quantity. Chlorination of drinking water should be ensured to avoid the outbreak of epidemics in the event of cyclones and floods.
- = The department of disaster management is the nodal agency in the Nagaon region and has already handled several flood and cyclone situation in the region. From this experience, it should be able to identify the low lying and vulnerable areas and the population of such places must be warned to be alert and to be ready to safer areas or to the relief camps in case of warning disaster.
- = The department of civil supplies & consumer affairs should decide for creation of buffer stock of food grains by making required withdrawal from the food corporation of India. Also, adequate quantities of kerosene and diesel should be procured and made available through the fair price shops.
- = Department of Agriculture should take steps to publicize precautionary measures to be taken to save the standing crops in the vulnerable areas. Farmers should be encouraged to have platforms in their fields to stock the crops. De-silting of the public and private irrigation canals should be ensured for quick drainage of paddy fields.
- = Fisheries Department shall alert all the people residing on river bank villages and hamlets about the impending natural calamities and advise the fisherman not to venture into sea till normalcy is restored.
- = Department of School education shall keep all schools ready for accommodating the evacuees and keep the central kitchens to function around the clock with in charge of the centers. NCC and NSS students shall also be grouped to send them for relief works.
- = Department of Animal Husbandry should store fodder, cattle feed, and poultry food etc. and also carries out the inoculation of animals against epidemics. The Key village units should harbor stray cattle with shelters.



- = Transport Department should keep ready the list of sufficient numbers of earthmoving vehicles, transportation vehicles such as trucks, tractors, tippers, poclains, mini buses etc. Further, all the listed vehicle allocated in connection with calamity has to be kept in roadworthy condition for using them in emergency.
- = Local Urban Bodies/Municipal Board shall make rearrangement for availability of Generators and pump sets at short notice. For areas with water logging and artificial flood local bodies should clear the L & U type drained which normally clog due to plastic materials and silt.
- = Police department shall set up a Search & Rescue Team which shall contain at least 20 police personal for each jurisdiction of the superintendent of police.
- = Similarly, the fire services department shall set up search & Rescue Team consisting of at least 6 members of each fire station.

## **10.5 MITIGATION AND PREPAREDNESS :**

Pre-disaster planning consists of activities such as disaster mitigation and disaster preparedness. Disaster mitigation focuses on the hazard that causes the disaster and tries to eliminate or drastically reduce its effects. The best example of mitigation is the construction of embankments and construction of proper drainage system in flood prone areas to avoid floods. The other example includes retrofitting of weak buildings to make them earthquake resistant. And preparedness focuses on plans to respond to a disaster threat or occurrence. It takes into account estimation of emergency needs and identifies the resources to meet the needs. The first objective of the preparedness is to reduce the disaster impact through appropriate actions and improve the capacity of those who are likely to be improving the capacity of those who are likely to be affected most. The second is to ensure that ongoing development continues to improve the capacities and capabilities of the system to strengthen preparedness efforts at community level. Finally, it guides reconstruction so as to ensure reduction in vulnerability. The best example of preparedness activities are the development of community awareness and sanitization system through community education and administrative preparedness by way of stockpiling of supplies, developing emergency plans for rescue and relief. For successful mitigation plan it is

necessary to identify short- medium-long term mitigation measures risks and damages.

The following steps can be taken to reduce the risk in the unfortunate event of the said natural disasters.

- = Restore communication networks
- = The task force in association with reach and rescue teams of police and fire should thoroughly search the affected area for survivors and injured.
- = In case of heavy flooding and inundation, vehicular access may be restricted and hence suitable rafts/boats should be used to rescue and evacuate the people affected by the floods
- = Water logging in low lying residential areas should be pumped out and the pump out water could be let out through the nearest natural drain or canal. Also fire engines can be deployed to pump out water from affected areas during emergencies.
- = Any breach in rivers, streams or natural drains should be protected with adequate sand bags or creation of temporary embankments to avoid further damage to property and human life
- = In case of heavy storms, power supply to areas which are in the primary path of the storm can be disconnected to avoid hazards due to breakage of power lines. Provisions should be made to provide generators for temporary power supply to storm affected areas.
- = Relief camps should be opened in appropriate location where a large number of people are affected.

**Table-45 :**

Type of sector	Sub-sector	Mitigation measures	Responsible Deppt.	Time frame
Infrastructure Development	Road	Repair, Restoration of vulnerable points on roads before onset of monsoon	PWD/DRDA	During Normal time and immediately
	Embankments	Repair of vulnerable points in river/canal	Water Resources/Irrigation	During Normal time and immediately



		embankment during free flood period		✓
	Bridge	Repair, restoration of vulnerable points on bridge before onset of flood	PWD, NH	During Normal time
	Communication	Ensure maintenance and proper functioning of electronic communication system	BSNL	Round the year
	Drinking water	Replacement of tube well/pipe water	PHE/ Health Deppt.	During Normal time and immediately ✓
	Power	Immediate response for repair of electric line and supply	PWD, ASEB	Round the year
Health	Vaccination	Adequate stock piling of vaccines should be ensured	CMO, DVO, NGO,s	During Normal time and immediately ✓
	Training	Training Programme of common people should be programmed for Health care, sanitation and first aid from village level to district	CMO, DVO, NGO,s	During Normal period
Livelihood	Awareness	Creating	Leading NGO,s	During

		awareness among general public during normal time to insured human life		Normal time
	Agriculture	Alternant cropping pattern/flood resistance crops/crops insurance etc	Dy. Director Agriculture	During normal time and immediately after disaster.
Planning and Response	Relief/Rehabilitation	Regular updation of departmental contingency plan, Community awareness and involvement of NGO,s Regular conduct of mock drill	Line Departments	During Normal time

## 10.6 RESPONSE PLAN :

Response measures are those taken immediately prior to and following disaster impact. It is important to have clear organizational chart structures with established line of authority within the Government mechanism to handle the response plan in case of natural calamities. Response plans include formation of functional teams and providing plans for the transportation, evacuation, search and rescue and rehabilitation. Survey and assessment part should be the part of response activity.

Coordinated IEC activities should be initiated well in advance

- = Mock Drill should carry out twice a year.
- = Make separate plan of operation and list of required materials, tools, machineries for each kind of disaster.



- = Train the rescue team with equipments
- = Train the panchayat leaders, Municipal leaders, Volunteers etc.
- = Approach to NDMA and SDMA for any kind of assistance.
- = Incident Command Officer shall organize regular coordination meeting with all DM committee members, Head of Offices, Public leaders, NGO,s and Senior citizen in consultation with the chairman
- = The RRT,s (Medical & Police) will be alerted by the incident Command Officer.

### **10.7 AIM OF DISASTER RESPONSE :**

- = To ensure the survival of the maximum possible number of victims, keeping them in the best possible Health in the circumstances.
- = To re-established self sufficiency and essential services as quickly as possible for all population group.
- = To repair or replace damaged infrastructure and regenerate viable economic activities.
- = In situation of civil conflict the aim is to protect and assist the civilian population.
- = In case involving population displacement the aim is to find durable solutions as quickly as possible.

#### **10.7.1 RELIEF :**

##### ***10.7.1.1 DURING THE DISASTER :***

- = Disseminate the warning of disaster from DDR & IC to all concerned destination in single attempt by using mass sms, announcement through radio, social media, and print media and ask the people who are likely to be affected, to take shelter in safer places.
- = Immediate deploy the forces to clear the route of search & rescue and also to clear the traffic from the route of rescue

- = Command to the forces, NGO,s. SHG,s & volunteers to rush immediately to the affected area for search and rescue with all pre listed tools, equipment for disaster.

#### **10.7.1.2 CITY DISASTER MANAGEMENT PLAN :**

The points mentioned above should be part of a city or region level disaster management Plan. The Disaster Management Act, 2005 has brought a change from response & relief oriented approach. This has encouraged many cities to formulate a city disaster management plan, the same should be worked for Raha MPA as well to enable it to be better prepared in case of natural disasters in the future. As part of Master Plan 2045 the authority feels there is a need for a CDMP for the Planning area covering the following general principles.

- = Risk & Hazard Assessment
- = Planning
- = Organization
- = Resource Utilization
- = Need for Specialist
- = Training

Generally, the CDMP prepared for the planning area should include sectoral plans covering the following aspects of disaster & emergency management:-

- = Overall Preparedness
- = Emergency Response
- = Prevention
- = Mitigation
- = Recovery
- = Reconstruction
- = Capacity Building Plans

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